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Victory Conditions

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For C-283. A family, once found, is never lost.

Names changed to protect the innocent.

Part One: Woods Hole

Sixteen people met

Launched into a world unknown

Could this soon be home?

Chapter One:
Welcome to Woods Hole

I knew SEA (Sea Education Association) was a real college program and not a bad reality T.V. show, probably, although I could see something of the sort in my head a little too easily, a *Jeopardy* – like host standing in front of our house introducing us. Later we would joke about how it was the ideal premise for that type of monstrosity. Still, I knew the program had to be real for a lot of reasons. I'd had a classmate who attended previously. I'd had a phone interview with a real SEA person, and had interacted with the financial aid department. None of that was enough to make it feel real as I drove to Woods Hole a good month after the semester had already begun for my friends back at Bard College. Some things in life seem too good to be true, and some people would have you believe that means they *are* too good to be true. Those people are wrong. SEA Semester seemed too good to be true, seemed too much like childhood wish fulfillment, but I pulled into the driveway and suddenly it was the realest thing I had ever experienced. I was on campus, and very shortly I would be going to sea.

All the houses on SEA's campus are named for navigational stars. I was assigned to D House, but told to knock on the door to E House, or Eltanin House, the main set of our reality T.V. dramedy. I don't remember What D stands for. We only ever called them by the first letters. I've always had a habit of being early, and had planned an hour and a half longer than I needed to drive from my home in New Hampshire to Woods Hole.

Once I got my things settled into my new room, I psyched myself up to go visit E House. When I knocked, I was met by the person who would be my fastest friend: Amelia, a bio and art major from outside of Chicago. Amelia and I stared at each other for a minute before I realized that, as the person who knocked, I should probably start the conversation. Instead of introducing myself, I said, "Are you Amelia?" It had been a long drive. She was kind enough both to answer me and to lead me to the PB and J while we made introductory conversation. Where are you from, where do you go to college, what's your major, etc.? Not long after, the rest of our crew started to trickle in, though I can't remember their order of arrival.

Harper proved to be the bearer of the highest energy I have ever felt. She arrived in a bubbly whirlwind with a car that was absolutely packed full, which felt a little ridiculous for the amount of time we were going to be there. Harper brought, for six weeks, about as much stuff as I would usually bring for a full semester of school. Everyone who was there offered to help carry it, and between all of us it didn't take terribly long to ger her things to her room. By this time, Harper had already gotten three or four people to agree to go for a run with her. There was at least one run almost all sixteen of us attempted to take to the beach, though we ended up getting lost. Harper was often the nucleus of our group activities.

Rose is the freest spirit you will ever meet. She understood the concept of impermanence, and the emphasis that puts on the present moment. She also had very few personal boundaries, which is to say she put up few if any walls, but she always respected them in another person. Group dinners that quickly became known as Family Dinners were largely shaped by her. Early on, when we were still essentially a group of strangers, Rose suggested that the person who was the chef should get to ask a question that we would all answer. This became an important ritual, to the point where afterwards we all texted each other about how much we missed it.

Zack brought the comic relief, which is necessary when you're dealing with topics like climate change and the lasting effects of colonialism. He is not a man who takes himself seriously. As the leaves changed, we got ready for the campus-wide Halloween party. Zack decided to dress up as Stevie Wonder. He was going to draw a mustache on himself in Sharpie, which is a classic prank someone else should've done to him while he was sleeping. Mara and Lisa set him up with eyeliner instead, but there is no doubt in my mind that he would've gone through with it. Zack was also quietly reliable. There was more than one time I confided something in him I wasn't ready to share with the larger group, and I don't think I would've felt safer with anyone else as my dive buddy when we went to sea.

Lily has the most staggering intellect I have ever encountered, and is also one of the kindest people, which was a wonderful combination of qualities because she was always excited to share what she understood. Lily was the first person to make me feel like I had a right to be there. In classes, she would bring up these complex concepts that I had no hope of understanding because they were clearly a combination of years of scientific education and her own unique way of thinking. Every time I pointed this out, she patiently, thoroughly, and concisely explained the concept to me. One time I admitted that I often felt lost and like I had no hope of catching up, and Lily told me she was impressed with how quickly I managed to pick up concepts she had spent years studying. She made me more confident and quicker to speak up in our science classes.

Alice is in possession of the type of self-awareness it sometimes takes people their entire adult lives to cultivate. She knows herself well enough to be completely unselfconscious in a way I really admired and tend to struggle with myself. Writing is something Alice has a harder time with. She had a bunch of cover letters she needed to do for internships she was applying to, and when I heard she was having a hard time I offered to help. Alice accepted my help and continued to ask for it. Accepting and seeking help from others is a really underrated skill. On the flip side, Alice also had a lot of experience with cetaceans (large marine mammals), especially whales. At one point she planned a trip to take all of us on the whale watch she had worked with. Unfortunately it didn't work out due to weather issues, but it was meaningful all the same that she tried. Alice understood her own strengths and weaknesses and I think it makes her more comfortable than most people will ever be.

Ariel and Alice were very good friends, which made sense because Ariel's self-assurance and Alice's self-awareness complimented each other well. I first met Ariel when she moved into the room we'd share with Ryleigh and Eliza in D House. Her mom dropped her off. She tossed her stuff on the top bunk of one of the beds and introduced herself with a mega-watt grin. Almost as soon as she entered, Ariel controlled the room. She had the presence of the most popular girl in your high school. Something about her drew people in, but in a different way from Harper. Harper was more like the RA who bakes everyone cookies during finals week. Ariel just had an incredible amount of charisma, in a way that could either make people feel welcome or isolated. For the duration of our semester, she kept her powers set to welcoming.

Jordan is a great musician, and his laid-back attitude went a long way toward breaking the ice when we were first getting to know each other. Dance parties became a regular staple of our program, every Friday night in E House. Jordan was one of the driving forces behind these events. He would take out his guitar and do live-music sing-alongs sometimes. He also brought this absolutely massive speaker that we would hook people's phone's up to. When everyone was still a little nervous about showing their own personal taste, Jordan took up the position of our

DJ. He, Rose, and Zoey also went out and bought lights for our dance parties. We had this Christmas light that we put on the dining room table. It was our approximation of a disco ball, and it cast long bright blue snowflakes across the entirety of the room and us. I don't think we would've become what we did without those parties, and I don't think we would've had those parties without Jordan.

Diana is your mom friend on steroids. She seemed to have a sixth sense for moments of crisis, and was always there to be reassuring when something was going wrong. We first bonded over our love of coffee. Diana was often among the first up in the morning, and she would always make a big pot for all of us zombies to find in the communal kitchen. Between classes I did my best to reciprocate. I had a French press that would make just the couple of cups we needed in time for our fifteen-minute break. This led to a lot of serious conversations over coffee. Sometimes she knew something was wrong with me before I did.

Eliza had a cutting wit, and she always *saw* things in a very particular way that I don't think I truly appreciated until we saw her photography. Seeing the whole trip through her eyes when she shared the photos with us later was amazing. The way she framed each of us in her shots made it seem like we had all truly been seen; she captured the best of us. She also wasn't above teasing, of others or herself.

Lisa is from Norway and very proud of that fact. She gifted us with a lot of knowledge about herself and her culture. One night when Lisa was the chef for Family Dinner, she made us dishes from her home in Norway, consulting with her mom on the recipe and finding the proper ingredients to substitute. I was impressed with her strength and determination. Lisa wasn't just in the U.S. for the SEA program; she's a full-time student in New York. Science is already difficult enough to communicate, but she's doing her entire college education in a second language, spending all four years of undergrad at least in a foreign country and still dedicating herself to trying to make her research accessible. It would be easy to lose touch with her home in that amount of time, but Lisa makes space for every aspect of who she is.

For as long as I've known her, I've thought of Zoey as the human embodiment of a sunflower. She has the brightest smile. She might seem fragile at first glance, but she's also got an intimidatingly large presence, and all she uses it for is to tilt further toward the sun. While we were taking our classes at Woods Hole, Zoey decided to learn to make bread. She had never done it before. She was working with a sourdough starter, something my dad has done a lot, so I got his recipe for her. As soon as the starter was ready to go, Zoey started churning out loaves. They were amazing. The rest of us descended on the kitchen like locusts the moment she pulled them out of the oven, which never seemed to annoy Zoey. Baking bread was something that brought her joy, and she wanted to share that joy with the rest of us.

Ryleigh has the strongest sense of righteousness. She seems to feel things so strongly that they overtake the entirety of her, if only for a moment. Much of her righteousness seemed to be rooted in compassion. The moment I remember her the happiest is when she was showing me a picture of her dog napping on the heated wood floors at her parents' house. She was passionate enough to completely lose herself in her microplastics research from the beginning. Ryleigh's certainty that her manner of managing the environmental concerns we face was the absolute correct one could be frustrating to me at times, because it often didn't take into account the difficulties that different people would face making her exact choices, but I could never stay mad about it, because it so clearly came from a place of love and a determination to speak for creatures who couldn't speak themselves.

I never would've guessed it when I first met him, because he has a physically intimidating presence, but Hunter is incredibly gentle. I had him pegged as a pretty stereotypical sports dude, but then he accidentally bumped into me. He's a pretty muscular guy, so he knocked me half over. At first this seemed like textbook sportsdude behavior, but Hunter also reached out to steady me, and was very concerned with whether or not I was okay. He also brought a particular type of fun to our dance parties. Hunter, as it turns out, is an actual dancer, and he taught all of us how to swing dance over the weeks at Woods Hole. Teaching was something he

excelled at. Without him, I don't know if I would've been able to do the dives we had to do once the actual research began. Our first dive lesson on land, I struggled. I couldn't figure out how to equalize, which is something you do when diving to alleviate the pressure in your ears. Our professors tried to help me, but they couldn't figure out where I was going wrong. By the end of the lesson I had a splitting headache. Later, Hunter sat with me and went through how I had been diving step by step with me until he found the issue.

Mara has the kind of confidence you find on someone you would willingly follow into an active volcano. She called us all "kiddos" even though she was the same age as the rest of us, but somehow it seemed justified when she did. Mara had been in the Air Force, but she was transferring to the Navy to be an ocean scientist when we met. Since SEA, she's gone to Officer Training Camp. Mara hated that I never wanted to wear shoes because she was worried I was going to hurt myself, and she was always willing to be a steady, calm presence if someone was nervous or scared.

In short, this was by far the best group of people I had ever had the honor to be a part of, but none of us knew that yet at the moment. For the time being, we were strangers trying to figure out how we were expected to fit together, and this wasn't even the whole group. We still had to meet our professors, who would not be able to remain separate when we went to sea. Captain Dave, who was both our Leadership in a Dynamic Environment professor and our actual ship's captain, proved to be a bit of an enigma at first. He captains Artic expeditions with huge ice-breaker ships, but on shore it seemed a bit strange that Captain Dave was who he was. He was a kind man with a friendly presence, but I guess he just wasn't what I imagined a ship's captain would be. He seemed a bit too unsure at times. He was great to have as a professor, though. One of the things we had to learn while we were still on shore was how to navigate the ship, because it would've been a bit of a problem if we didn't know how to do that at sea. This process involved huge charts and what I found to be a surprising and confounding amount of math. It was a struggle, but Captain Dave wasn't willing to let us struggle alone. He lives pretty

close to the SEA campus, and he left his phone number on the board and told us to text him if we needed help with the navigation homework. He meant it, too. He came in and met us in the classroom on a Saturday. I think that was the first time I could sort of imagine what he would be like at sea.

Doctor Joe Conch was our science professor and Chief Oceanographer. His first impression comes off a bit "surfer dude", but he's cuttingly intelligent. His greatest asset, as far as I know, is his passion. I think a five-minute conversation with Joe could make anyone want to be a marine scientist, and he would believe you could do it, too. I was the furthest thing possible from a scientist, but Joe always believed in me. We had to decide, at one point, if we were going to take the easier or harder version of our Oceanographic Research course. As a writer, I assumed I would be in the easier course, but Joe encouraged me to take the harder one because he thought I could do it. With his help, I did. I was in his office more than once, which was wall to wall filled with thriving greenery.

In addition to Joe, we had a PhD candidate named Corrine Grabb teaching us ocean science. Corrine was our coral reef expert, and she gave us talks on coral biology. Her PhD project is related to what we were doing with the coral, though I couldn't explain it to you now; it went well over my head. Jordan, Rose, and Zoey joined Corrine as her research assistants for their own research project. Corrine existed in an interesting superposition between student and professor. She was technically one of our teachers, but she was also a very recent alum herself and as such was closer to our ages. Corrine wasn't afraid to have fun with us. One time when she was working late at the lab with Jordan, Rose, and Zoey, they invited her to Family Dinner. She talked and joked with us, and even participated in our dinner question. It didn't feel like an authority figure was there, and she only ever acted authoritative if it was truly important. It was refreshing to interact with Corrine, because she was in the middle of her own research and obviously passionate about what she was doing.

Then there was our politics professor, Mike King. Mike is the largest, loudest, friendliest man I have ever met in my life. He was also a SEA alum who was overjoyed to help initiate us into what he considers to be his growing sea family. The first memorable thing Mike did was load us into cars for a field trip to a place called The Knob. The Knob is a small hike that leads to a large rocky outcropping where you can see the ocean and shoreline stretched out before you. Mike brought us there to explain that he was a local, and to demonstrate how the view of the shoreline, and in connection the ocean-based economy, had changed since he was a kid. He told us that in his childhood there would be dozens of ships going in and out to sea every day. When we were on The Knob, there were maybe two or three ships. Mike's job, which he took very seriously, was to humanize the research work we were doing. Mike is an avid conservationist who regularly drives the New England Fisheries Council to frustration with his unwavering dedication to the health of the ecosystem, but he also understood the human perspective, and it was important to him that we did too. Mike has a dramatic streak. He had to, to take a group of college students on a hike to give a lecture about conservation and politics while staring out at the horizon, wind billowing his long-sleeved white button-up shirt like some kind of Hollywood pirate.

Finally, we had our Marine Environmental History professor, Tim Kochen. By the end of the trip, Tim would be one of my closest friends, Our class, C-283, was Tim's first-time teaching at SEA, and it showed, though not in a bad way. Tim just didn't know most of the other professors as well as they knew each other, and didn't know as much about sailing. He was doing a lot of learning at the same time we were, and he was in a discipline much more familiar to me. His newness to SEA meant Tim shared the most in our struggles, but I think he also shared the most in our joy. As our history professor, Tim led a field trip to a warehouse where the New Bedford Whaling Museum was hosting their exclusive exhibit of a Grand Whaling Panorama, the most intact example of such an item. He had to commute for our classes about an hour and a half to two hours from Boston, and this field trip left early. Tim was not only on time, but was also full of enthusiasm. He took us up on the storm wall next to the exhibit and painted a picture

for us of the history of whaling, the panorama itself, and the very harbor we were standing at. Even when he was clearly struggling more with something than the other professors, Tim never lost when it came to enthusiasm both for his love of the things he was teaching and his love of sharing it with us, his students.

I hadn't expected to fit with these people who became my family, something that my mom delighted in saying "I told you so" about later. Most of my crewmates were science majors, or working in something science-adjacent. I'm a writer, a story-teller. I know I won't always have the blessing of being so fully a part of what I write about. It's hard to be part of something and observe it; as Schrodinger says about Quantum Mechanics, observation can alter the action. Even Mike's politics class felt alienating at times, because he had structured it for an audience of scientists, and the things I didn't understand highlighted for me how different it seemed like I was from my peers. Still, isolation was a feeling born to die in Woods Hole, or maybe a feeling born to die with this group of people. Four of us slept in D House, but we all lived, ate, worked, and played in E House. According to the program, we were required to cook for each other five days a week. As a general rule, we cooked for each other seven days a week.

Chapter Two:
Not a Scientist

I am not a scientist. There was a time when I thought I could be, and kind of wanted to be, but that had well passed by the time I reached high school. My dad disagrees with me. He's a middle school science teacher. Dad's taught fifth, sixth, and seventh grade, and he's a believer in the idea that science is a part of the essential experience of being a human being. He gives this speech to all his science classes. He tells them, "Every single on of you is a scientist, if you think about it. You've used the scientific method yourselves. Think about a little kid, who's just starting to experience the world. The first thing they do is ask a question: Can I eat this? Then they form a hypothesis: Yes, I can eat this. The baby puts whatever it's wondering about in its mouth to test the hypothesis, either accepts or rejects it, and then moves on to repeat the experiment under different conditions, with different subjects. You all know how to think scientifically. You don't need to learn. You just need to remember."

Dad always tried to get my brother, Evan, and I into science. Some things we did were typical. I think just about every kid in the US has tried the Mentos in the Coke bottle trick. That didn't make it any less fun to drop the Mentos in, a job Evan graciously allowed me to have, and then race my brother and my dad "safety" behind a nearby tree. We also got to try some other fun experiments. Dad likes to keep his classroom hands-on, and he doesn't like to do the same experiments over and over again, because sometimes older kids tell younger kids about classes and then the wonder is spoiled for the next generation. I distinctly remember one experiment. I think I would've been about eight and Evan around ten. Dad had a new experiment to demonstrate the properties of water. He had us make little submarines out of a cut off bit of plastic straw and clay or playdough. One end of the straw was stuffed with the playdough. This partly-stuffed straw serves as the submarine. Then we put the straw-playdough submarines in a plastic water bottle. If you squeezed the bottle, the change in water pressure would make the submarine sink to the bottom, and you could make it go to different parts of the bottle by squeezing and releasing. It was a fun summer afternoon.

In another universe, I followed my dad's belief about science to its natural conclusion, like my brother the anthropologist did. That version of me is pouring over research papers looking for the right question to be asking. In this universe, she died at fifteen with the unfortunate marriage of science and her arch-nemesis, math. In eighth grade, being good at science got me tossed into the advanced math program as well. For two years, I just barely managed to keep my head above the water. In Sophomore year of high school, I finally drowned. Honors Algebra II is the only class I have ever failed in my life. It wasn't for lack of effort. I

stayed up all night poring over that textbook. I still remember the nightmare I had when I fell asleep on my book one night.

I was in my math class, sitting next to my best friend, Tabetha. She was a year ahead of me, but the advanced program meant I was taking classes a year ahead of what I should've been. Having the class with her was the one redeeming quality. At first it seemed normal enough. We were struggling to keep up with the notes, helping each other where we could. Then the lights went out, our teacher disappeared, and a new voice started speaking. At first, it seemed to be coming from nowhere. Then we realized that the voice was coming from the parabola on the board. It delivered an ultimatum. The parabolas would give us problems, and we would have to solve them. If we got the problem wrong, we would die. Only one of us would be allowed to leave alive.

The first kid to go never even finished the problem. He was shaking too hard to hold his pencil. We all watched in shocked silence as the arrowed end of the line on the graph shot out, impaling him through the heart. Reality set in; we had to focus or die. The most unrealistic part of this dream was that Tabetha and I were the last students standing. Knowing what it would mean, I threw the last problem. I woke up the moment before the arrow would've made contact with my chest.

That was pretty much the end of my scientific career. I still fought my way through the advanced science track, because I am incapable of recognizing when I really ought to quit, but it wasn't fun anymore. I had one moment of glory when I won the Egg Drop Contest, but other than that, it was just a struggle. When I ran out of science classes, it was more of a relief than a

disappointment. I didn't go out of my way to seek out science classes in college, and I didn't relish Citizen Science, Bard's scientific literacy program. Instead of doing a real research project for, as we were supposed to, I took a paper we had read and made found poetry out of it. It was a story of forbidden love between a tree in the control group and a tree in the test group.

I was happy to forget about science in college until I saw the poster for SEA. The quickest route to my dorm at the time was through the Campus Center, where the study abroad fair was being held. Next to the door I had to walk through was a poster of a ship, the SSV (Sailing School Vessel) *Corwith Cramer*. Even if I didn't want to go, what was the harm in looking? The woman manning the booth asked if I was interested, and I told her it looked cool but I wasn't a science major anyway. She insisted I didn't need to be and handed me their book of classes. I took it, out of politeness, I told myself, and walked back to my dorm with it.

Once I was there, I started reading, and I couldn't stop. Childhood romantic notions of the sea and pirates and a view of the stars on the open ocean, unobstructed by light pollution, were stirred up in my mind. When my brother and I were kids, Dad used to take us to the beach. We grew up in southern New Hampshire, in a small town just about 45 minutes away from the coast. Our mom would take us too, but my parents divorced when I was five, so these trips were separate. I think Dad took us a little more often. Evan and I would play in the ocean for a while under Dad's watchful eye, then the three of us, and later the four of us with our step-mom, Marie, would take long walks down the beach, climbing over rocks and dipping our hands in as many tide pools as we could find, interrogating Dad about anything and everything. With Dad, the world could never be big enough. We were always reaching.

With our Mom, things were different. Not bad, just different. I think to Mom, the world has always been too big. She warned us, every single time we went to the beach well into our teenage years, never to go out past belly-button-height water in the ocean, lest we be swept away. My brother pretty much always adhered to that, I think, but he was taller than me, and I wasn't about to be left behind. Mom let it slide, because Evan was with me and Evan has been overprotective since the day I was born. I would think about this, about my mom's rule, well later when I jumped from the side of the ship into the deep ocean, far from where anyone could see the shore. I was always built to defy. My parents built up my sense of adventure in different ways: Dad made me realize there was something I wanted to reach for, and Mom made me realize I was brave enough to do it, even when the world was telling me I shouldn't.

No one fed my zeal for life quite like my older brother, though. Through our childhood, Evan and I were almost always together, but by virtue of being older than me, he was also always *just a little bit ahead of me* in every single thing we did. When we were little kids, we would run around the yard for hours on end playing pretend. We picked up sticks and sword fought, sometimes pretending to be pirates on a grand adventure, and sometimes just relishing the manic aspect of childhood that makes it seem like a good idea to wail on your sibling with a stick. To this day (because yes, summer vacation does still involve backyard "sword" fights), I think I can count on one hand the number of times I won. He went to high school first, he went to college first, he started dating first, and even though that was the way it was supposed to be, it infuriated me. I always wanted to be just a little bit better, to push myself a little bit further than was reasonable.

Going to sea was not reasonable. Within an hour, I was certain there was nothing else I wanted more in the world. I knew of another Written Arts major a year ahead of me who had done SEA. She took their Colonization to Conservation in the Caribbean semester. That semester is more social sciences based, and on the surface seemed much more reasonable for someone in our discipline. I glossed right over it. The first thing I did was rule out programs that had lab prerequisites that only a science major would be likely to meet. Then I looked at the maps. The only thing I had any true regard for was how far the projected course for the ship went away from land. Of the programs open to not-scientists, the Caribbean Reef Expedition went the deepest into the open ocean. I wanted to be far enough from shore to see the stars, unobstructed. I have always loved the stars.

Decision made, the first thing I did was call my dad. He's my most reliable threshold guardian. That's not to say that he isn't encouraging or supportive; in fact, I defy you to find a dad who embodies those qualities more than mine does. Still, Dad values thinking things through and having a plan. He's the first person to get a megaphone and yell "DO IT!" from the sidelines when I have a hairbrained scheme, but he'll also make sure it's plausible first. When I come up with an off-the-cuff plan, he will hit me with a volley of practical questions that I might not have thought of. If he manages to significantly stall or stump me, I need to take a step back and consider a few more angles before I commit to whatever I think I want to do. If I successfully field his volley of questions, I've gained my most devoted ally. This time I successfully fielded his concerns, from whether the credits would transfer to if it would affect me graduating on time, and Dad started getting both of us hyped for the coolest study abroad concept ever.

After that, I employed perhaps the most reliable life skill I have picked up in college: bullshitting. I lied to a lot of people about being absolutely crazy for coral reefs. I had to convince my academic advisor, the study abroad office, the registrar, my moderation board, and SEA themselves that I was a serious academic doing a serious academic thing, and not just a kid who decided she wanted to run away to SEA and play at being a science pirate for a semester. “I want to because I can and it sounds absolutely wild” didn’t seem like an answer any of these people would love.

When classes started at Woods Hole, it seemed like I may have finally come up against the fabled consequences of bullshitting your way into something. I hadn’t struggled so much academically since high school, and any feeling that reminds me of high school is automatically a bad one. Joe’s classes were the most obvious for me to falter in. Even the basic oceanography course didn’t feel basic. One of the obstacles the SEA program works with is that the semester is condensed, so the professors are forced to teach a massive amount of information in a miniscule amount of time. Mike’s class, I thought I would be good in. I have taken so many politics classes. I was relieved when it was time for us to go to class with Mike; unfortunately, that relief was short-lived. The politics terms and issues, he was prepared to explain at length, but he glossed over the science, feeling assured that his students would be fluent in it. I didn’t let him go on without me. Whenever I was confused, which was often, especially in that first class, I raised my hand. Mike met my questions with the friendliness and enthusiasm most professors have for an eager student, but I imagined I could feel the annoyance growing among my classmates. Dad and I had joked about me getting thrown overboard before I left. Now it was starting to feel like a real possibility.

Leadership in a Dynamic Environment (LDE, or Sailing Class, for short) was the one place we were all theoretically on the same footing. There were rare exceptions to this. Jordan is a hobbyist small-boat sailor, skilled to the point where he teaches it at summer camp, but apart from that, we were all starting out together, which is why my messing things up stung all the more. Captain Dave had us start class with this infuriating group activity. He split the class in half, two groups of eight, and presented each group with a rolled-up tube of paper. Those eight-person groups were split in half again into four person groups. Four of us lined up on one side of our paper tube, facing the other four. Then Captain Dave told us each to hold out one finger and placed the paper tube on top. We had to lower it to the ground without touching it more or dropping it. It was a race. I don't know how we were supposed to pull it off. All I know is I must have been messing it up somehow, because my group identified me as the problem. The bigger problem was I couldn't figure out what I was doing wrong, so I just kept doing it. In a later class, Captain Dave taught us about the concept of error chains. Error chains are strings of little mistakes that, if left unchecked, grow into utter catastrophe. The stakes of this exercise were too low to make for a genuine error chain, but I felt like I was trapped in one even if I didn't have the words for it yet. My group grew increasingly frustrated, and I got defensive. Because I couldn't figure it out I thought it had to be something different, and every time we had to start over it got worse.

To rub salt in the wounds, we took a personality test immediately after. Personality tests have always been an Achilles Heel of mine, because I feel like there's a right answer even though I know there isn't. The way I want to perceive myself gets all mixed up with how I want others to perceive me, and somewhere in there who I actually am. I obsess over the ins-and-outs of

what every answer possibly means for the depths of my soul. In reality, it's not that deep. Worse yet, it was a personality test about what kinds of leaders we were. The last thing I felt like at that moment was a leader. Any answer would make me a fraud. Diana and Amelia both comforted me about it after, so at least I knew I hadn't alienated myself completely.

For most of the storm of those early days, I did have Tim's class. It was familiar territory, exactly the kind of observations and connections I was used to making. I hadn't taken a history class per-se yet in college, but the breadth of politics and social analysis classes I had taken seemed to be serving me well in the classroom. I asked good questions, gave the right answers, and even had friendly debates with Tim a time or two. It was what I was used to a classroom being, which was my comfort zone. Then the first essay hit, and the fact that I hadn't taken a history class before mattered. It's not even like I bombed it. I don't remember what my grade was, but I know it was nothing I couldn't come back from by the end of the semester. Still, I felt devastated, because something had gone wrong in the one class where I really felt like things were going right.

Almost the entire class had the same problem, though. Secrecy wasn't something we really did, and we were all sharing grades and comments by the end of the afternoon. The flavor was different, but the problem was the same. Most of my classmates had written too much like scientists, and I'd written too much of a literary essay. Tim assured us that the essay wasn't a large part of our grade anyway, and we spent a class talking about how we should think about essays for him differently in the future to avoid the same problems. We were all in it together, which was the bottom line, really. Almost everything we were dealing with in school was new to

me, but everyone was facing at least one thing they had never dealt with before. I may have been lost at sea, but I wasn't out there alone. I just hoped I wouldn't be the anchor that dragged us all down.

Chapter Three:
Dance Parties

It was a strange, baffling, and entirely pleasant reality for me that the social came together well before the academic. Usually in my life, the academic comes together rather quickly, and the social never quite gets there at all. I'd learned to be fine with that, or so I told myself. There was always something else to do, another test or essay or project to focus on. I must've been lying to myself about being fine with it though, because I was so mesmerized and touched by this situation where I couldn't have stayed on the outside if I'd tried. There were too many people, already from day one, who wouldn't let me.

We spent most of our time in E House, in the living room/dining room/kitchen. All sixteen of us would descend on the space at breakfast and lunch. Lunch, our shortest meal, often turned into a feeding frenzy, with everyone vying for microwave and stove space and prime leftovers. Often, if one of us was making something multiple people might want, we offered to share. I made eggs for me, Zack, and Amelia a couple of times. Ariel and Alice both shared pasta

and mac n' cheese with me, and Eliza and Diana's leftover tamales always went quickly in these scrambles. This space was also the center of family dinner. Even cooking for dinner became a group activity. Two or three people would sign up, but while they were working someone would play music and we would all sort of slowly gravitate toward the kitchen, where we would hang out and sometimes volunteer to help chop or stir things.

The Woods Hole section of the program was designed to make us closer. They put us at least three to a room, required us to eat dinner together, banned romantic relationships, and packed our days so full of activities we barely had the energy for something they hadn't planned, all in an attempt to turn a bunch of land people into a crew of sailors before they'd even seen the ship. We took everything they gave us a step further. Family Dinner went a long way toward this. Rose suggested dinner questions our first dinner, explaining how they had helped break the ice in other living situations she had been in that were at least somewhat similar to Woods Hole. We went with it. I think we were all a little desperate to speed up the process of getting to know each other in this situation where we were already weirdly intense roommates. That first question was something simple, like where everyone was from or why they wanted to come to sea. At some point we asked about people's favorite things about homes and favorite childhood memories. We worked all the way up to really personal questions like the deeper meanings behind tattoos we had or wanted to get, or our deepest fears.

As important as all of this was, the dance parties were the heart of our group. The first dance party was probably the most like a typical college party, because we didn't really know each other yet. Those who were 21 and over got alcohol for themselves, beer and wine only

because hard liquor was explicitly banned by the program. We played a couple of drinking games, starting with Harper's favorite, King's Cup. For this game you need a can of beer (specifically a can, not a bottle), and a deck of cards. Everyone sits in a circle around the can of beer, as though it were the centerpiece of cult worship. Each person in turn draws a card. This card indicates something the participants in the game must do. The game doubled as a "getting to know you" activity because some cards triggered side games like Never Have I Ever. Once the round was complete, the person who drew the card would stick it in the tab of the beer can. Whoever popped the can, theoretically, had to chug the beer. I'm not sure what our plan was if someone under 21 had been the one to pop the can, but it didn't matter, because we got distracted long before that happened and played a new game, Flip Cup. This was less get-to-know-you, but a little more fun. Partners stood on opposite sides of our dining room table from each other. Each team had three red solo cups. You had to use the edge of your cup to flip the shared cup into your partner's cup. One person was the flipper and one was the catcher. I was much better at catching. Somehow this was also supposed to make people drink, but I don't know how that mechanism was supposed to work. We just had a lot of fun throwing the cups around.

I think this was also the night when Hunter nearly knocked me off my feet, and showed me how kind of a person he could be at the same time. He was one of our 21-year-olds, and by that point I think he was starting to feel the alcohol. When he ran into me I expected typical sports guy posturing, but Hunter looked so sad after he ran into me. He put his hand on my shoulder, steadied me, and asked if I was okay. It was so unexpected, and I think that's around when I called it a night. I was already feeling pretty overwhelmed; I'd never actually been to a college party before, and it had been quite the week leading up to that. I needed time to regroup.

By the next party at the end of the second week, we knew each other much better. The program had a way of accelerating your relationships. How do you avoid getting close to people you spend just about 24 hours with seven days a week? The answer is you don't. The second party started to look less like what I imagine college parties look like, just on a smaller scale, and more like what *our* parties looked like. This was the party Rose, Jordan, and Zoey got the Christmas lights for. We all prepared a little more this time, moving furniture around while they were gone. I believe this was also the party where Hunter's dance lessons were introduced. It was a surprise, to me at least, that dancing was something Hunter put a lot of time into. He was up for a competition with someone from his home school sometime after we all left the SEA program. He didn't teach us anything quite that difficult, but it became a staple of our parties for Hunter to teach us swing dance.

The first time, I just watched. It was another insecurity I had at the time, that these people were all more athletic than me, and if I tripped over my feet trying to swing dance, I would stand out even more, and not in a good way. I had way too many insecurities. It all would've been easier if I'd been able to just be, but that was something these people would teach me to do over the course of the semester. For the moment I watched. Mara and Ariel were his most eager students at first, both sure and graceful. The whole class opened the dance floor and watched Hunter spin them in turn. Sometimes he stopped them to make a correction, but for the most part they just seemed to get what they needed to do. As the night went on, Hunter gained more students, but the rest of the class went back to bouncing around like crazy around them, and eventually they were all reintegrated into our incoherent horde.

Over the course of our next few dance parties, Hunter noticed me watching; he seemed to notice most things like that. He asked if I wanted to try. It was one thing to be able to sit by myself and be convinced I shouldn't try, but it was another thing entirely to deny myself when it was being offered to me. It was more than I could do, but I did put out a token protest. I was clumsy, I was heavy, and I was afraid of falling. Hunter, always confident in his own strength, brushed aside my concerns and called me over to him. Even though he knew I had been watching him for the last couple of weekends, Hunter carefully explained all the steps. As much as a non-issue as my worry about falling was to him, he still addressed it. We started out at the part of the dance that had me most worried, the dip at the end. There was no version of the end of the dance, in my mind at least, that didn't end with me on my ass. Hunter put his arm behind my back, then braced the inside of his foot against my heel. This, he explained to me, was the important part that meant I wouldn't fall. Then, to demonstrate his point, he put his other hand on my shoulder and pushed me back, well past where I would be able to keep my own balance. I felt myself panic, but I couldn't even flail, let alone try to keep myself up. I didn't need to, though. He had me.

"See? Don't worry about it. I won't let you fall."

I'm not sure if those were his exact words. You don't always know how important something is going to be when it happens. You don't always know in the moment that words are something precious you should write down. I know he said something like that, though, and I know what he meant. I was about as good at the dancing as I expected to be, and I tripped over

my own feet more than once that night. After Hunter's demonstration, I never worried I was going to hit the ground.

Not until a later party, anyway. Hunter's dance lessons continued to expand, and for the first time one of the other boys wanted in on it as well. I don't remember if Jordan ever joined in. Jordan was full of energy and kind of all over the place during these events; one night he started a trend of climbing the doorway between the entrance and the living area. I know Zack joined the dance lessons, though, because it was the return of my fear of falling. Hunter had him learn with me. There didn't seem to be anything to say about it, because I didn't want to risk hurting Zack's feeling's, but I wasn't very happy about the idea. It had nothing to do with Zack and everything to do with me. I was still clumsy, and still heavy, and still pretty worried about embarrassing myself. Maybe I could've explained all that and had Zack's feelings go unhurt, but I wasn't willing to risk it, so I risked my pride instead. It turned out I had nothing to worry about. Coordinated I was not, but by that point I had practiced with Hunter enough not to fall, and I knew the steps well enough to be able to help Zack. It was a good feeling.

Later that night, probably around one in the morning, I was loopy with tiredness but still going strong. I just wanted to dance, so I took a glance around the room. Hunter was talking to Mara, and I didn't want to interrupt. Then I landed on Zack, who was only engaged in dancing by himself. I grabbed his hands and grinned, and he caught on immediately. Both of us only knew the first most basic part. Hunter had moved on to more complicated steps with some other people. I think Ariel was the one who got the furthest in the end, going as far as learning

sequences that involved lifts. She wanted to teach her boyfriend later. At one point Hunter tried to teach me some of the more advanced moves, but I never really caught on.

Zack and I didn't need any more than we already had. The simple steps we did know could be repeated over and over again, and we did with joy. I can't tell you how many times we spun around the room, because I don't know. Neither of us were particularly coordinated about it, either, but it didn't matter. We fell over ourselves and each other, laughing all the while. I wasn't worried about falling anymore, or about differences between me and the rest of the crew, or how close I always seemed to feel in the early days to being discovered as a masquerading intruder. There wasn't space in my mind or my heart for anything but the kindness of his eyes, the warmth of his smile, and the childlike glee that I knew was a mutual feeling. The two of us had gotten along fine before, but I tend to think of that dance as the start of our friendship.

One night, Jordan stripped his mattress and dragged it out and up the stairs, which he then sailed down. It didn't take long for the rest of us to gather. The mattress was dragged up the stairs and ridden down at least a dozen times. At first, I felt kind of dubious about this endeavor. I like to think of myself as the hero of the story when I read a book or watch a show; I think we all do. The truth is, sometimes at least, I think I might be more of a B character. Instead of the plucky teen hero recommending we skip school to have one more day of summer, I'm their dorky best friend reminding them that if we do we might get in trouble, and if we get in trouble we won't go to college, and if we don't go college our lives will be over. This is a long-winded way of saying sometimes I'm no fun. That's how I was when the mattress sliding first started. All I could see in

my head was someone crashing into the wall, breaking their arm, and not being allowed to go on the trip. I didn't say anything. I didn't want to ruin the fun.

Somewhere in my head, though, was the idea that I really really wanted to do it. I remembered being a little girl sleeping over my grandparent's house, watching *The Princess Diaries* on the couch with my grandpa well past my bedtime. I'd always thought the mattress sliding scene looked like fun, and when I was a little kid I knew I would've done it if I'd had the chance. Sometimes I think children are way better than adults. Eight-year-old me was taunting twenty-year-old me. She would've done it without a second thought. What kind of coward had I become?

I wasn't going to let my inner child get away with talking shit. I dragged the mattress to the top of the stairs with Zack. We positioned it carefully, and Hunter, who was already at the top of the stairs from another run, helped keep it steady while we climbed on. Once we were settled the only thing keeping us up were Zack and my grips on the railing and the wall. I could feel how precarious it was, the mattress starting to slip. On the count of three, we let go. We sailed down the stairs, screaming and laughing, and stopped well in time at the bottom. If we hadn't stopped on our own, the others were waiting to stop us before anything bad could happen. Zack and I grinned at each other. We both joined the group in dragging the mattress up, taking turns helping with the set up and riding in different combinations of people.

We were all much better together. I became a braver, freer person with the rest of them. I know the feeling was mutual because of the way we all gravitated toward each other. We didn't have to be the way we were. The program required a lot from us socially, but it didn't require us

to have hours-long conversations at dinner every night or coordinate screenings of movies like *Moana* and *Hercules* for all sixteen of us, or get group tattoos (about half of us did). Something about being that specific sixteen felt whole and right, and bigger than every insecurity I had and my inability to do more than fake being a scientist. Somehow, despite all the reasons I felt like I shouldn't be, I was a part of that, a part of them.

Chapter Four:
Playing Games

We had a screening of the movie *Merchants of Doubt* (2014) for Mike's class. We never used class time for things like this, though, so we were responsible for setting it up ourselves. The only TV we had access to was in the sort of "common area" of the class building, so we had to screen it up there. Someone, I think Harper, found the movie online, and we all agreed we were going to watch it at, like, 8PM the day before it was due. We dragged a bunch of pillows and blankets up to the class building, Harper made us popcorn, and we settled in for what seemed like it was going to be a boring time.

At first, it was. It had a very typical "movie for school" vibe in the first ten minutes or so. Then the narrator started really speaking, and I was hooked. This semester, I thought, was a break from my usual work, but I've been studying all this time with the final goal of being a journalist in mind. The people described in the documentary, people who made the problem of

climate change worse by covering it up, were like looking in a fun-house mirror that wasn't very fun. They used the exact same tricks I had been learning to try to bring the truth to hide the truth for the sake of profits. Companies controlled the narrative, bribed scientists with less integrity, and fabricated a climate change controversy so they would be able to continue killing the planet for profit.

Suddenly I had a real reason to be there, not a bullshit or fabricated one. One of my favorite assignments in college was on *The Drapier's Letters* by Jonathan Swift. These letters basically sparked the Irish revolution, because they gave a contrary narrative to the one the monarchy was pushing. These letters gained enough traction that the Monarchy had to respond, and then the Drapier fired back. This dialogue created the necessary shift in the narrative. Studying to be a journalist, usually bias is talked about as a bad thing. This assignment was my first real exposure to intentionally spinning a narrative in your favor as a good thing. It's something I'm pretty good at now. I've been doing it to you the whole time you've been reading this, carefully deciding how much information to reveal, when, and why to shape your perspective of myself and my crewmates into something that suits the story I want to tell you. If I'm doing my job right, this is kind of jarring to hear. You hadn't thought of it much, if at all, until this moment when I'm pointing it out to you. Why do you think I'm choosing to tell you now? Even this is part of the spin.

Clearly, the scientists were then and still are in need of someone who knows how to spin. This gave me the space to finally unmask myself. The key to transitioning out of bullshitting and into a place where it seems you actually belong is controlling the narrative. My manipulation of

this narrative thread began as soon as I arrived. I admitted that I was a writing major, but I played up my interest in the subject, and reused some of my lines about interdisciplinary study from my petition to study abroad. Mike's class, however, gave me the space to move away from this narrative into something that felt much truer. The biggest secret to bullshitting is method acting. To successfully bullshit anyone else, you also have to bullshit yourself, at least a little bit. Living in that falsehood isn't sustainable, at least not to me. Part of how the big oil companies managed to get away with hiding the truth was through a highly unethical combination of lies and bribery, but some of it was through the exploitation of the inaccessibility of science to the general public and the tendency of scientists to state plain fact. This is usually an asset to them in their field and not something I would like to see them lose. Science depends on uncertainty; uncertainty provides the space for other scientists to keep asking questions and building on each other's research. The plain facts often leave things open-ended, and this open-endedness is exploited by those who want to obscure the simple truths scientists think they are disclosing. Scientists are phenomenal at a lot of things, but no one can be phenomenal at everything. This is why we have societies, and I had found my place in ours.

As usual, Tim's class was the first place I got to really explore this. In the wake of that disastrous essay, Tim decided his history class was going to involve some writing lessons. We had to split into three groups and read three different essays, then asses the strength (or lack thereof) of the writing. When it was my group's turn, I gave a mini lecture on sentence structure, and how one can use varied sentence length and structures to control the pacing of one's work. I was a little embarrassed about it later, when I realized exactly how into it I'd gotten, but I didn't need to be. My crewmates thought it was great. We'd been living in their passions, and now they

got a chance to glimpse mine. One night, when a bunch of us were working on essays, I typed without looking at the keyboard or the computer, staring out a window that was behind me. Jordan peeked over my shoulder and saw the words forming almost flawlessly, and the way I corrected typos without having to look based on the feel. With his reaction, you would've thought it was witchcraft.

Despite its integral role in my making this breakthrough, I maintained a complicated relationship with Mike's class. I'd taken plenty of politics classes before, but I'd never had a professor who was actually a politician. With his position on the Fisheries Council, that's exactly what Mike was, though I don't think he would describe himself that way, and the cynicism with which he sometimes presented the process chafed. One of my dad's favorite quotes, by George Carlin, is "Inside every cynical person, there is a disappointed idealist". This has led to Dad saying, many times over, "I'm just a disappointed idealist". I think Mike was the same thing, but before I knew him it just looked like cynicism. My clashing with him came from the fact that I'm still young, still an idealist, and not quite so disappointed yet. I wasn't prepared to accept the supposed immutability of the darker aspects of the system that he was trying to prepare us for.

Mike organized a lot of his class in games. If I were less neurotic as a person, that might've been fun. The problem was that I could never let the cigar just be a cigar. One class, we played a strategy board game called *Diplomacy*. This game doesn't rely on dice or cards; it's all about negotiating with your fellow players. The game was further complicated by Mike giving us all objectives that suited his needs. I found myself playing Germany, a country that begins at a distinct disadvantage with resources. My only directive from Mike was to *survive*. On my own,

there was no way to do that, but with alliances I could tip the scales. I perceived myself as being in a unique position to make alliances precisely *because* my only goal was to survive. There was no way, at least early in the game, that my goals would be in any serious conflict with anyone else's. Or so I thought.

Quickly, I made an alliance with Jordan. Maybe I should've realized when it happened that the alliance was a little too easy, but I didn't. I gave him everything he asked for, and asked for very little in return. I didn't need much. I only asked for enough to stay viably in the game and make it look to the others like I had some sort of plan in place. At first, it seemed like things were going well. I only had to break one alliance, with Alice, because she was acting kind of shady. She went back on her part of our deal. I didn't really need what I had asked her for, of course, because I didn't need anything other than survival, but I had precedents to set. I was relying on my alliances for any sort of edge, so I couldn't have alliances that weren't reliable. If she was going to go back on her word, I couldn't trust that putting what little resources I had toward her cause would actually help me in the long run. Jordan, on the other hand, had follow-through.

That was, until he didn't. Not long after my alliance with Alice collapsed, Jordan betrayed me, moving in on the country I had been promised. I was furious. Disproportionately so, for the fact that it was a game, but I felt betrayed. In my mind, there was no reason for Jordan to take it from me. Little did I know, the small region I had requested, one that would usually have been strategically less important because it yielded fewer of the in-game resources than anything I had aided Jordan in conquering, was one of the victory conditions Mike had given

him. We were forbidden from sharing these conditions with each other, which meant there was nothing Jordan really could've done to avoid what happened, and I apologized to him later and made it clear that while our moment of opposition in the game triggered it, he had no real fault in the absolute frustration I was feeling by the end of class.

All my ire was focused on Mike, who was the one who truly set us all up, and the professor made the unfortunate mistake of trying to calm me down after class. I walked out quickly as soon as class ended, because I knew I needed a minute to get my emotions under control; I didn't really love who I was being at the moment. I couldn't go down to the dorms, because privacy didn't exist there, so I went to the lounge area in the main class building to try to collect myself. Mike followed. He expressed his deep concern at how upset I was over what was "just a game".

That was the exact wrong thing to say to me, and hearing it come from Mike was the most insulting thing possible. From one of my crewmates, I would understand. They hadn't been thinking about that class activity the same way I was, and while I didn't grasp that at the moment, it wouldn't be difficult to come to terms with later. Mike, in my opinion, should've known better from the start. Mike was the professor, the architect of the experience. As an educator, you don't do something in your classroom if it's "just a game". You don't do something if it doesn't have meaning. It wasn't a game. It was a model. He was modeling something for us by having us play that game, something frankly terrible. He was modeling hidden motives, a world where it's impossible to trust anyone or be trusted in return, a world where burning others was the only way to avoid being burnt yourself. He was modeling the cynicism that had built in

him through his work on the council, and to me that was the same as modeling hopelessness. I was disgusted, with him, with the world, with myself? All I really knew was that if this professor could take the most supportive, loving, amazing group of people I'd ever met and turn them into people willing to carry out that model, then the rest of the world was surely worse.

The problem, of course, was that it was never actually that deep. Maybe it should've been. I certainly thought it should've been. What I thought didn't matter in the face of the facts, however. The most important fact was that the rest of the players just saw it as a game. If they had thought about it the way I did, that we were modeling the world of politics, trying to find a way to protect the things that were important and get what we needed while being sensitive to the needs of others, I don't think that anything would've played out the way it did. Maybe we would've ignored Mike's rules and shared true motives with each other in secret. Maybe we would've been more transparent without going quite that far, stating simply, "I can", or "I can't", when offered something, and finding the spaces in between we could work with. Maybe we would've done a million other things, but I don't think anyone would've chosen to model treachery and deceit as the way the world ought to work.

I thought I was done with Mike, at that point, but he certainly wasn't done with me, and I'm not really capable of leaving anything alone. We had to write an essay about the line we walked between being scientists and being advocates. I was frustrated with this assignment, because, as we have well established by this point, I am not a scientist. This forced me to reach out to Mike, because I had no idea how to proceed. I emailed him, explaining that my primary relationship to science was advocacy, and this meant the line he wanted me to draw in the sand

was nonexistent. Mike saw my point and rephrased the assignment into an essay about how science and advocacy influence each other in my case.

Because I'm a little shit sometimes, I took the assignment as an opportunity to criticize Mike's class. This harsh essay was actually the watered-down version of my wrath. Immediately after the *Diplomacy* incident, I handled my unruly emotions by starting to write an essay that was an open and unapologetic drag of the course and Mike as a professor. Some of it was undeserved, but at the time all I really knew was that I was absolutely livid. Highlights from this monstrosity include "There is no relationship between science and advocacy and politics other than that people will use anything as a prop to get what they want. Anyone who tries to do the right thing because it is the right thing is another lemming walking off in the line, which is why my line between science and advocacy does not exist", and "You got these wonderful, shining people to stab each other in the back, and the rest of my faith in humanity is gone". The title, "This Line Doesn't Matter Because We're All Forked Anyway", was pretty great too. I only got through about a page of this before I admitted that even I could not make an essay worthy of handing in to a professor out of that.

After I'd managed to avoid cutting myself on the edge of that extreme melodrama, I took a stab at the essay again. This version of the essay was much more measured. The title, "All Lines Are Created Equal, but Some Lines Are More Equal Than Others", was more balanced between my emotions and something genuinely academic, instead of dismissing the premise of the assignment altogether. It started with the thesis, "That being the case, the answer to the question of where my line between science and advocacy lies is that I have more than one line,

and those lines are more dotted than solid." I explored themes of media theory, misinformation, disinformation, mal-information (as in information that is shared with bad intent), and the idea of moral relativism vs. moral absolutism. I concluded with the idea that the right thing to do is always situational, and the best tool we have to decide where the line should be is a hopefully well-developed moral compass. Even in the more academic essay, I couldn't avoid getting a dig or two in there. "The problem with this is that people are untrustworthy and terrible. That is the real take-away from Ocean Science and Public Policy. But I can't believe that, even though the class seems designed to teach an utter despair for human nature", was the most direct swing I took.

In response to this essay, Mike surprised me. He graded it well and praised it. I had gotten more emotional than is typical for a college essay, to be sure, but he had asked for a first-person essay grappling with a personal topic. Still, I expected some hit to my grade for so openly and thoroughly disagreeing with the professor and his methods. As a student who's struggled with a certain anti-authoritarian streak my whole life, I've been docked more for less. That wasn't the case with Mike. He seemed to relish the challenge I presented him with. I'm not sure if I'm proud of that essay, because some of what I said might have been a bit unnecessary and maybe even rude, but at the time, at least, I felt it to be both pressing and true. When Mike responded to it with intrigue rather than ire, I had to reevaluate. There was something I had missed about him, though I wasn't sure exactly what that was yet.

After Mike handed back our papers, I followed him and asked to speak with him. He gave me one of his wide grins (everything about the man was wide and large; I'm almost 5'7"

and I only come up to his shoulder) and led me to his office. Mike told me he had hoped I would want to speak to him, because he wanted to speak to me. It seemed like he was confident enough I would make the move to let it be. I'm not sure how he predicted it, because I couldn't have predicted it myself. I was still on the defensive as we entered his office. Something about Mike had always put me a little on edge, but I wasn't sure what or why or how, so I wasn't sure it was really fair. We sat a in charged silence for a minute as I gripped my essay tightly. I don't remember who ended that silence, or how, but I know it was much easier to talk after that. He explained that it was never his intention to make everything look hopeless, but it was a broken system, one he promised he was trying to break down by the time we, the next generation of people willing to fight, had to deal with it.

My point of view didn't really need explaining; I had shamelessly laid it out for him in the black and white of the essay he somehow loved. Slowly, Mike won me over to his side of things, even parts I didn't think I would ever agree with. He told me a story about something he had come up against on the Fisheries Council, a small betrayal from a friend he still considered a friend. His ability to compartmentalize these things always baffled me. Mike admitted that he knew his side of things was rarely, if ever, reasonable. He was the extreme environmentalist, but Mike didn't see his perspective as there to win. He viewed his role as the person who shifts everyone else a little greener by scaring them with exactly how green he *could* be, if given the chance. Still, he should've won that one, if his friend hadn't backed out. I suggested a solution, I think emotional blackmail, which surprised Mike because in class I was always pushing for something a little more honest and open and traditionally good.

"That's devious." He shook his head at me, but he couldn't stop the smile. "I don't think even I would do that."

I raised an eyebrow at him. "If you thought of it you would."

"Yeah, okay," he agreed. "I guess I might."

That was far from my last conversation in Mike's office. He had another game in the works, one that lasted the whole of the Woods Hole section of the program. We were going to have to model his most recent big Fisheries Council vote. We weren't allowed to look at the results until after this big mock event. We were all given interests to represent and told to negotiate with each other off the floor. Based on what he talked about, the outcome almost should've been decided before we got there. As the time of the game drew close, we felt unpleasant ripples in our community. I met with him about this regularly, how to balance the deviousness I was capable of with my own self-righteousness. I was used to a version of politics that was a zero-sum game. I can't stay friends with people who disagree with me politically a lot of the time, because a lot of the time that means they disagree about whether I or people I care about deserve personhood. In Mike's world, it's just about resource management. This resource management can have catastrophic consequences, and some people are breathtakingly stupid about it, but very few people Mike comes up against in his day-to-day life are actually malicious about it.

In this way, we lived in different worlds, but they were similar enough. I found my niche in the group. The models we did in Mike's class, the games we played, were difficult because they pitted me against people I cared about. At Mike's advice I tried to let the mock council

actually just be a game. We knew I'd gotten the academic point, and that was easier. I didn't have to fight the people I cared about anymore. Fighting on behalf of them, however… That I could do. That I *will* do. That's what I'm trying to do right now.

"The system doesn't work," Mike told me, "but I'm trying to break it down. If I hand you a pile of rubble and ashes, I think you can make something great."

I promised him that I will.

Chapter Five:
Becoming Scientist

For a while it seemed documentaries were all the rage, because Joe wanted us to watch one for his class too. Rather than making us find it on our own, Joe scheduled a screening in our usual classroom. The movie was called *Chasing Coral* (2017). We were all excited to watch it, because it had brought Harper to us. I wasn't actually the only not-scientist in this program. Harper was a business and education major. A chance viewing of the movie awakened something in her, and made her determined to have an experience with coral. She found the SEA program. In a lot of ways, her journey was more honest than mine. I just wanted the adventure. Harper, despite not being a scientist, was crazy for coral. Rose had started out in the sciences, but moved away from them slightly as time went on. Diana had an ecological degree of some sort (she had extended her college career by one semester to participate in the program), but it was more of an analyzing science type thing than hard science.

Joe enticed us to the (mandatory) event with an array of snacks. He encouraged us to have fun with it, to treat it like a movie night, so we did. I marched up to the class building with my notebook for class in one arm and a haul of all my blankets and pillows in another. Other people brought blankets too. We spread them out in the middle of the class tables that made a rectangle around the room and settled in. I think Lily, Amelia, and I were sitting on the blankets on the floor. Some of our crewmates just sat at desks, and others had computers or other work out that they planned to do while we watched. Joe didn't mind. He was well aware that a lot of the people in our class had seen the movie before.

Chasing Coral started the way most nature documentaries do: beautiful shots of the underwater world that a slightly hypnotic voice explained. As we watched footage of coral reefs and sea turtles and jellyfish, the hypnotic voice said, "It's a world most people never explore." I grinned with excitement. Maybe most people never explore this world, but we weren't most people, and soon we were going to be exploring it ourselves. By the time the title sequence ended and the movie moved into a more technical realm, I was hooked. The narrator could've told me pretty much anything and I would've stayed hooked, because being part of the SEA program made the documentary so much more tangible than it might have otherwise been.

The movie cut to land right away, giving us an explanation of what was to come. The people who made the documentary started out with a Google Maps-esque reef survey project. They explained the importance of reefs, that they are a food source for over 500 million people, and explained how they were creating virtual dives so people could, on some level, experience the reefs that are so often out of sight and out of mind. Having experienced both virtual dives and

real dives, I have to admit the virtual ones don't come anywhere close to the real thing, but if the ocean is out of your reach, this window in is far better than nothing at all.

The narrator was introduced. Richard Vevers was, as it turned out, a not-scientist just like me. Vevers had started out in advertising but, he explained, found arguing about what ply toilet paper to sell unsatisfying. I don't blame him. Advertising is something I've been told I would be good at, something I've been told to consider if I can't get a job in journalism right away, but it's difficult to imagine taking on a job where I might have to do something like market cigarettes to kids. Vevers was a long-time ocean-enthusiast, and a hobby diver from the age of sixteen. As he watched changes on the reefs he loved, he realized that the ocean had an advertising problem. The Catlin Seaview Survey, a series of pictures used to create virtual the virtual dives, was his first attempt at rectifying this. It didn't make people understand. Instead of the solution he envisioned, it was a first step.

Not counting the intro, the first reef the movie showed us wasn't really a reef, but the skeleton of what once was a reef in the Florida Keys. The sight was typical at the time the movie was filmed, but hadn't been 30-50 years previously. At the time of the movie, 80-90 percent of reefs in the Florida Keys had been lost. In the past thirty years, 50 percent of the world's reefs had been lost. Normally, these statistics would seem dry, if not still shocking. Juxtaposed with the image of miles upon miles of dead coral, the emotional impact of the cold calculations was devastating. The movie turned from the sad images of coral to possibly even sadder marine biologists. The ocean is dying, and the people who have dedicated their lives to the it are pretty depressed about that.

To counterbalance the emotional devastation of the past ten minutes or so of the film, *Chasing Coral* moved on to an explanation of what coral actually is. I thought I understood what coral was, but when it was actually explained to me, it was clear just how wrong I was about that. I don't think a lot of people really understand what coral is. Corals are animals. That's the first thing, and I think the most commonly-understood thing. We understand, intellectually, that coral are part of the animal kingdom. That's about where my personal understanding ended. I didn't really understand how coral were animals, either. I got that somehow they technically fit the requirements for the animal kingdom, but they seemed more like plants than animals the way they remained stationary. Turns out my assumption that they're stationary was very incorrect.

Coral, technically, don't move a hell of a lot. They find a good spot to plant themselves, do that, and stay there. Coral even seem to photosynthesize, which is something you really would expect more out of a plant! This is because the coral have a mutualistic symbiotic relationship with little microalgae called symbionts. A mutualistic symbiotic relationship is when two creatures have an attachment to each other that is beneficial to both parties. The corals give the symbionts shelter, and in return the symbionts photosynthesize and provide the coral with food. Symbionts are also where corals get their vibrant colors. So, during the day, the symbionts handle productivity and gather food from the sun. At night, however, the corals themselves come to life! Corals are made up of a bunch of tiny mouths with tentacles on them, called polyps. At night food comes down to the level of coral, often in the form of zooplankton (tiny ocean life, often a larval species of something larger and more recognizable like lobster), and corals show their true colors as the ultimate stinging tentacle monster of the deep. *National Geographic* has a great video on YouTube of a jellyfish losing that battle.

Of course, no movie about our climate crisis can stay on an up-note for too long. These majestic tentacle monsters are being critically threatened by climate change. Saying the temperature of the ocean is rising 2 degrees Celsius (or 3.6 degrees Fahrenheit, for my Americans back home) doesn't sound like much, but think about it like the human body. On average, let's round and say human bodies are 96-97 degrees Fahrenheit when healthy. If you raise that by 3.6 degrees Fahrenheit, the body is now running a low-grade fever. When ocean temperatures rise 2 degrees Celsius, it causes corals to react like they are experiencing a fever, and one of the things they do in this situation is expel all their symbionts. This is what makes coral look bleached; their skin is translucent, so you are literally seeing the bone-white of their skeletons. With their primary food source gone, corals will starve to death if they don't manage to recoup this population. A bleached coral is not dead, and bleaching is not *necessarily* a death sentence, but it is a serious illness that leads to death in coral frequently. You know a coral really is dead when algae starts growing on it and the coral can no longer fight to keep these plants from taking over its body.

This phenomenon, while terrible for coral and the ecosystem as we know it, is amazing for communicating science. It's difficult to explain abstract concepts about seemingly minute changes in global temperature. Changes smaller than we might see in the weather from day to day have devastating and lasting impacts. The dramatic and visible reaction of the coral is the best concrete example I can think of. Vevers and his team set out to be the first people to document the process of coral bleaching in real time. For this, the team created special underwater time-lapse cameras, and a young coral nerd named Zack Rago joined the team as an engineer. While they were discussing options, Vevers sat between the scientists looking utterly

amazed and a little bit confused. I have rarely related to anyone as much as I related to him in that moment.

To make a long story short, they then spent many months in which many things went wrong attempting to document the coral bleaching event, eventually having to abandon the cameras and take manual footage several times a day every day. They also were the first people to document the new phenomenon of coral fluorescing. Corals that had been bleached lit up and fluoresced in the most vibrant colors. No one, not even the locals around their location in New Caledonia, had ever seen this happen before. It turns out the corals were creating their own sort of chemical sunscreen in a last-ditch effort to save themselves from the rising ocean temperatures. The process of recording all of this manually was exhausting and depressing. Zack, who had arrived at the site full of excitement and optimism, left depressed. Then he got to interview his hero, the godfather of coral science, Dr. John "Charlie" Veron. They went diving on a healthy reef together. Zack's excitement and optimism seemed to be restored, and he became a science educator.

The tense atmosphere the movie created through the end was cut, in our classroom at least, by a scene that features divers from one of their citizen science initiatives talking about coral bleaching in their areas. We had mentioned to Corrine at one of her coral lectures that Joe was making us watch *Chasing Coral*. Corrine endorsed the movie, but failed to mention that she's in the movie as one of the scientists speaking about bleaching around the globe. Our classroom exploded with noise as soon as we saw her face. Joe had to pause the movie while we all freaked out about Corrine, because we were not paying an ounce of attention anymore. The

giddiness of the moment undercut the solemnity of the moment. Then the movie went into the optimism of science education.

I left the movie feeling hopeful and energized. Maybe I shouldn't have; it had made very clear that the world is in dire straits. Still, I can't help but focus on the moments of hope. There's no point, to me, in getting caught up in the melancholy of all this, even though it's very real and present. Hope is what matters to me, because hope is what makes us work for change. I left the movie feeling hopeful and ready to do that work. Seeing the instrumental role Vevers, the befuddled and amazed not-scientist, played in this effort to save the coral, an effort that I think made a difference if only because it brought Harper to the program, energized me. If it inspired her so deeply, I can't imagine it didn't inspire others. The communicators and the scientists involved in the project had a mutualistic symbiotic relationship.

When Ariel, Ryleigh, Eliza, and I got back to our shared room, I discovered my optimism wasn't quite as shared. The others were caught up in facts like the loss of 50 percent of reef life, and honestly I couldn't blame them for that. It was devastating, but it wasn't changing, which is why I chose not to focus on it. Ryleigh had a bit of a breakdown. She expressed her confused frustration that people could still do things like eat meat and drive cars and use plastic when the world is dying. I will take responsibility for my part in the brief confrontation that followed. It was obvious that Ryleigh was deeply upset at the moment, and I was not, so it was not the appropriate time for me to voice my own opinion on the matter. Not being able to keep my mouth shut about anything is my fatal flaw, and her high-handedness about this issue had been grating on me for a long time. I pointed out that something like 70-80 percent of carbon

emissions, our greatest climate threat, are the responsibility of 100 corporations, and blaming other people for not being able to maintain the lifestyle she personally does won't change anything. She snapped at me about that being a cop-out for personal responsibility. Now I was upset, and I went silent until enough time had passed that I felt like I could be subtle about it (I probably wasn't) and left our room.

My first thought was to go to the other house. There were always people there, and I would've been able to talk to someone. I didn't want to cause problems, though. Our group had been so cohesive from the start. A conflict I was at the center of wouldn't be the end of that. It probably wouldn't have been the end even if I had pulled people into picking sides in a larger drama. More likely than not, we would've worked it all out. I was scared, though. I was always scared of losing this precious delicate thing we had together, so I made for the class building instead. Even that felt too exposed, though the class building at midnight is the last place you would expect to find someone. I went downstairs to the ground level, to the official lobby that no one ever actually went to, found a corner, and cried.

At first, I mostly cried because I was mad. I was mad, and I had chosen to avoid confrontation, and the anger had nowhere to go so it flooded out of my eyes. Then I got sad, then hopeless. Ryleigh successfully brought me down with her. I'd left the movie in the first place feeling hopeful, focused on all the things we were doing as a group and everything we could still do to make it better. Ryleigh's insistence on her own lifestyle being the only right way… I was brought back to the idea that I was a not-scientist who didn't belong. I was hopeful about other solutions, about larger social change, and about the power of caring for each other. Ryleigh had

to know better than me, though. She was one of the scientists, so if she said this was the only way, this was the only way. I couldn't do it, I know other people with similar or worse means than mine couldn't do it, and I felt like we were all doomed. It was the only time in the whole program I truly wanted to go home. Why bother being there if nothing we were doing mattered? It felt like we were spiraling through an error chain, fools for not trying to correct and fools for trying. It seemed to me that, if Ryleigh was right, the world had gone beyond the point of saving well before we were old enough to even try to do anything about it.

Then I called my dad. Dad answered. He pretty much always answers when I call. Dad calmed me down enough to be able to form words, then I tearfully explained to him what was wrong. It wasn't something Dad was willing to accept. He claimed that my crewmate was young and naive; there was no point in letting it make me feel like I didn't belong. Dad pointed out that, if anything, this was exactly why I did belong there. Someone had to understand lives outside of science. All this time I had been trying to hype myself up as a communicator for the scientist exclusively, but maybe that communication needed to go both ways.

By the time I was done talking to Dad, I'd gone from devastated back angry. How dare she brush me off so easily? I was not advocating for a lack of personal responsibility. If anything, I was advocating for a type of responsibility even more difficult to accept. It's easy to see why she thought I was doing the opposite, I guess. If you're not particularly politically engaged, it seems like pointing to 100 specific CEO's as the source of the majority of carbon emissions *is* a cop out. If it's the fault of these specific people, there's nothing we can do about it. Maybe my perspective made her feel just as hopeless as hers made me feel. If CEO's are the only people

who can make a large effect, if we can't change anything without them, then what was the point of being there?

The thing is, we live in a democratic society. Those CEO's can pollute the environment because, structurally, we allow them to. I admit it's way more complex when you get into it. Money buys a lot of things, parts of our government included. The fight I propose, to hold these companies accountable, is not any easy one, but it is a worthy one. I wasn't going to stop fighting it. I became determined, in that moment, to do better than I had been. I understood the politics, I understood the history, and damn it I was going to understand the science. Imposter syndrome be damned, it was time to double-down. Maybe I'd shown up to the program a not-scientist, but I was going to become one.

Chapter Six:
The Project

Dr. Joe Conch was one of the best professors I've ever had the fortune of learning from. His greatest asset was his excitement. It was impossible to sit in his lectures and feel bored, because he was so excited about what he was teaching you couldn't help but be excited too. He was everything you could want from a science professor. He looked like he belonged on a ship: curly, wind-swept hair, striking blue eyes, and a wardrobe that consisted mostly of beachwear. His office, a place I spent plenty of time, carried on the aesthetic. I think there was more shelf space dedicated to plants than books.

Joe talked me into taking the harder version of our research course early, well before my disagreement with Ryleigh and subsequent decision to actually become a scientist. It wasn't something I'd even contemplated before coming to Woods Hole. In our first or second week, however, Joe provided the sign-up lists for the two classes and explained the differences. I was surprised the only real difference between the courses was the amount of writing. Those in the

easier version would still have to do all the same research as those in the harder version. They just wouldn't have to synthesize it into an actual scientific paper at the end. That bothered me. It felt like doing most of something and then leaving the last bit unfinished. If the only difference was writing, why couldn't I take the "harder" course? Joe thought I could, and I decided to believe him.

The time came to put my money where my mouth was. We'd gotten past the introductory parts of the course, and it was time to start picking topics for our research projects. To that end, we had a lecture with Corrine. As the coral expert, she was going to give us an overview of the animals, the ecosystem, and the kinds of things we could study. It was the least frustrated, least confused, and most engaged I had been in one of our science lectures. I had answers, right ones, and reasonable guesses for new information. Corrine explained coral reproductive systems to us. There are two main types: brooders and broadcasters. Brooding coral species never move very far from their original habitat; they've evolved to get really, really good at whatever's needed to survive in one area, and then they stay there. It only takes one to three years for these corals to reach maturity and be able to make more coral. Broadcasting species aren't as specialized, but they travel as far away as they can and don't spend a lot of time looking back.. Brooders are people who never left your hometown and almost seem like part of the buildings. Broadcasters, on the other hand, are the kids with wanderlust who always feel a little *Twilight Zone* energy when they do come home.

I was fascinated by the concept, especially because it seemed like brooders were getting the short end of the stick. They were supposed to be the ones who could hold up in harsh, if

relatively consistent, environments. Ocean temperatures are rising too fast, even for them. Where does that leave coral, then? My hope was that it left them running, that broadcasters could travel far enough in the ocean to reach a new habitat, further north than they used to live. I was so excited about the concept that I went back to my room and had a half-hour phone conversation with my dad where I excitedly info-dumped about coral reproduction. From there, I actually had to come up with a research question, something I was a little bit worried about. I came up with, "What is the distribution of brooders versus broadcast spanners across the islands we will visit, and does this distribution say anything about the effectiveness of each reproduction method in the face of our rapidly changing climate?" This eventually turned into the hypothesis, "Broadcasters will be able to fare better over a wider span than brooders, because they are evolutionarily predisposed to populate a wider range of habitats than brooders, who have evolved to be more resilient in specific habitats."

I want to explain what a hypothesis is. I know that probably seems a little too simple if you've passed middle school science, but bear with me.

One of the most surreal experiences I ever had in college was when my friend Zara recognized my dad. I was telling some sort of childhood story, I think about Dad's tattoos, so I pulled up a picture of him. Zara gasped. "That's your dad?"

Dad is a middle school teacher, but he's also a hobbyist musician (and baker, and painter, and writer, and woodworker, and…) and has made a couple of educational music videos on topics that his students were struggling with in Geography. He went viral. "Longitude and Latitude", the video Zara recognized him from, has 664K views on YouTube as I'm writing this.

The number continues to go up, and is probably significantly higher by the time you're reading these words. One of Zara's middle school teachers had used it. Now Zara pulled it up on her phone right there in the main dining hall on campus to make the rest of our friends watch it. It became a meme in our friend group, and for like a month the group chat was a devastating place to be. When your dad is known to be the crazy science teacher and he's dating (then married to) the zany eighth grade English teacher (*your* zany English teacher), you become numb to the typical embarrassment kids feel over weird things their parents do, but I never dreamed it would follow me to college.

Dad's most recent educational music video, still in production, is about the definition of hypothesis. It's something people tend to struggle with, and specific terminology is of critical importance in science. A common misconception is that a hypothesis is an educated guess. I'm sure that misconception remains because, colloquially, a hypothesis *is* an educated guess. In science, however, an educated guess is a prediction. Predictions can aid in illuminating aspects of your hypothesis, but they are not hypotheses themselves. A hypothesis is a tentative explanation for a set phenomenon based on evidence and observation. The most important aspect of a hypothesis is that it is both testable and scientifically contestable. A hypothesis can be disproved, but it can't be proved because something that is incontestably proved is a law. A theory, meanwhile, is a collection of hypotheses that have been proven time and time again, and while they are technically not simple enough to be proven mathematically, the way a law is, they are widely accepted to be true. This is why it's not correct to say that Darwin's Theory of Evolution is "just a theory". Theory, like hypothesis, means something different colloquially than it does

scientifically. When you talk about Darwin's Theory of Evolution, you are using a scientific term, not a colloquial one.

That's all well and good, but how do you go about crafting a hypothesis? "If, then, because" is a pretty common structure given to kids, and it works. My hypothesis can easily be rephrased as, "If broadcasters have a wider range than brooders, and if brooders are meant to specialize to a certain environment, then broadcasters will do better in the face of climate change, because they are evolutionarily predisposed to populate a wider range of habitats than brooders." I thought about rephrasing my hypothesis this way at the time, but I was worried it would look almost childish to established scientists. Underlying the structure, however, is the relationship between the dependent and independent variables. The dependent variable *depends* on the independent variable. That is to say, changes in the independent variable affect the dependent variable. You change the independent variable and measure the dependent variable. In a typical grade-school experiment of growing plants, the dependent variable would be plant growth, and the independent variable might be how much water or sunlight you give the plant. That's how it works in a controlled environment, anyway. In field work, we pick variables we believe to be independent and measure those along with their effect (or lack thereof: no result is a result!) on the dependent variable.

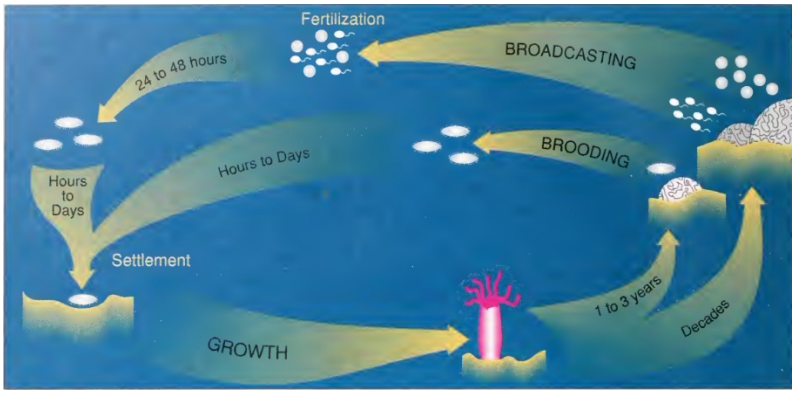
My hypothesis was a possible explanation for how coral species can adapt to deal with climate change based on established scientific observation. I wasn't sure what exactly my dependent and independent variables would be, but it wouldn't be too hard to find them. Corrine had talked plenty about which environmental factors have an impact on coral health.

Temperature would be one, for sure. Once I had a better idea of what we actually could measure at sea, they wouldn't be too hard to decide on. I had expected my hypothesis to be too simple, but Joe and Corrine both were pleased with it, and I was proud that I'd actually gotten something in Directed Oceanographic Research on the first try. It felt intuitive, the way it used to when I was a kid. In middle school science, my hypotheses were almost never wrong. I remember my sixth-grade teacher getting mad at me for "spoiling" an experiment once. It was a fair thing for her to think. She'd gotten it from my dad, and he had tested the experiment on my brother and I. She thought I was giving the explanation Dad had given us when my hypothesis and reasoning were both correct. Dad testing the experiment had been years prior to sixth grade, though, and I honestly didn't remember, at least not consciously. I had just paid attention to the lessons that led up to the experiment, and I was smart. Minus the frustration of my middle-school teacher thinking I was a cheating blowhard, this felt like that. My hypothesis couldn't be declared strong (or "correct") by my professor the way my middle school teacher could, because the research was new and exciting rather than scripted, but the validation of having it declared worthy was the same.

My teacher might not have been too far off in her assessment of me back in sixth grade Earth Science, because I let myself get a little cocky after that. I certainly wasn't going around bragging about how good I was. I still recognized that my peers had much more experience, grounding, and knowledge than I did. I started to think, though, that maybe Dad wasn't wrong. Maybe we're all scientists, at heart, in the simplest terms. Maybe I'm a scientist, after all. This viewpoint wasn't exactly discouraged. I was told, time and time again by professors and peers alike, that for the semester, at the very least, I was a scientist. Even *Chasing Coral* had talked

about citizen science, projects in which everyday people living in areas impacted by climate change were encouraged to actively participate in collecting data. Maybe this field, something that had always seemed so high and mighty to me, wasn't quite as closed as I thought it was.

That feeling lasted until our first presentation on our projects came due. When that happened, I panicked. I got caught on the "more research" part. I'm used to what I hear in class either being thought of as definitive, or the class itself being a subject here you can argue infinite positions without ever really being right or wrong, so long as you can back yourself up. This was different. I needed at least three scientific papers, and I had no idea how to sort though them. Even what I already had felt like too much. We were going to be responsible for knowing about sixty species of coral. I needed to figure out how to categorize them into brooders and broadcasters, but I couldn't find anything close to a definitive list. All it seemed I could learn was that I'd learned nothing. I remember one infuriating figure from our textbook, *Oceanus*:



This figure was, at the time, both the cornerstone of my project and the bane of my existence. It embodies what my hypothesis was based on, the mobility of broadcasters in comparison to brooders. It still infuriates me in its lack of specificity. One to three years? *Decades?* What kinds of time ranges are those? And settlement takes "hours to days" for both categories, so is there

actually a difference? Do I have a leg to stand on at all? Joe wouldn't have approved the project if I didn't, but damn if that leg didn't feel shaky. I was so far from understanding what I was doing that the first drafts of my sample graphs were hand-drawn, because I had no idea how to go about making them on the computer. Joe, ever encouraging, thought the hand-drawn graphs were endearing and showed dedication.

The answer to all my coral confusions was that all of those vague factors varied across species within the reproductive categories. Actually, as I would learn later, brooders and broadcasters were two larger categories in a reproductive structure that contains a lot more nuance. I didn't understand any of that yet, and I had a presentation coming up. Joe had emphasized to us that science isn't about being right, and we were encouraged to take these presentations, at least in part, as an opportunity to ask our classmates for help. I didn't want to do that. I'd felt like I had something to prove since day one, and my disagreement with Ryleigh had put a chip on my shoulder about it. Asking for help, admitting weakness, maybe even a form of defeat, wasn't something I was interested in doing. It's still what I did.

I've represented myself to you as a master bullshitter, as someone who knows how to spin a narrative. It's true. It's what I'm doing now, as a writer, but I wasn't sitting at the keyboard when this was happening, and as a person I've always had a problem with wearing my heart on my sleeve, as trite as the saying is. Whatever it is I'm thinking comes out eventually. That's how I got into the confrontation with Ryleigh in the first place. It's how I've gotten myself into and out of a lot of trouble over the years. The best thing I can do it usually to steer into the skid, and that's what I tried to do in this situation. I swallowed my pride, stood in front of my classmates,

and tried to explain all this seemingly conflicting, weird, over my head information as an exciting new horizon, and then put in a slide at the end begging for help. I remember I got some good advice from my crewmates, but I don't remember what it was, because after that class Joe graciously pointed me to the Holy Grail in the form of a pep talk. A lot of what I saw as failure, he saw as progress. Joe still believed in my ability to become a scientist, even if it was only for the semester, and I respected him enough at that point that I had to believe in myself, at least a little bit, if only for his sake.

"Reproductive Ecology of Caribbean Reef Corals" by Alina M. Smantz became the cornerstone of my paper. Joe had sent it to me before the presentation when I explained where I was stuck, but it hadn't clicked right the first time. I don't remember if it was because I was reading the paper wrong, or if I just ran out of time. Boy was I reading science papers wrong, though. I think Mara was the one who found me, head bent, litany of swears falling from my lips. The paper seemed incompressible to me. There were so many graphs the likes of which I had never seen, and I had no idea how to go about interpreting them. I tried skipping them, but most of the body of the paper didn't make sense without them.

"Wait… You're trying to read the whole thing?" Mara asked.

I didn't understand her horror. "Yeah? Joe said this paper would be important for my project."

"Okay, but you don't have to read the whole thing," she explained. "Just the introduction and the discussion, and maybe the conclusion."

Apparently, no one reads the whole paper unless they plan to reproduce the experiment. Reproducing experiments is always a good idea, because scientists can always use more data, but I was designing a new experiment. The results were relevant to my work, not the methods. At least half of the jargon that was tripping me up suddenly wasn't a factor anymore. Thanks to Mara, I was in a much better place to start working through the paper.

Once I got past my intimidation, it was a great read. However, it immediately led to a moment of panic when I read about brooding and unstable habitats. According to the paper, brooding was adapted to increase local recruitment (the number of individuals of a species that live in the local environment). "Unstable environments" sounded like the core of the problem I was trying to address, and to my lit-brain, this being explained in the final sentence of the introduction made it look like the thesis of the paper. I panicked because that would be in direct contrast with my hypothesis. Then, I calmed myself down. Firstly, so what if my hypothesis was wrong? That's literally the point of a hypothesis, and I could revise it. Secondly, that is not how science papers work. It was not a thesis; it was just a fact occupying a space I'm used to reserving for a thesis. Finally, it didn't undermine my hypothesis, which was about what happens when the environments become too harsh to adapt to. Crisis averted, I moved on with the paper.

As I read on, at least some of my confusion about the *Oceanus* diagram was abated. Brooding and broadcasting refers to types of embryonic development. In a brooding strategy, fertilization occurs sooner and closer to the parents. In a broadcasting strategy, fertilization happens later and more remotely. That's why the "hours to days" settlement section on the diagram is the same for both reproductive strategies. Once fertilization occurs, the embryo has to

settle. Reproductive material, on the other hand, can survive longer in the water. This is what ultimately allows broadcasting species to cover a wider geographic range. What it boils down to in the Caribbean, according to the Smantz paper, anyway, is that size is more important than age for longevity, and broadcasting species create larger colonies. This may be because brooding takes more energy, and creating a larger colony with a reproductive strategy that has more energy costs is not as effective.

The Smantz paper was full of interesting tidbits about coral, but for my paper the most important factors came together on page 48. There, Smantz says, "Those species that specialize to persist in frequently disturbed habitats on coral reefs must be able to either resist the destructive forces or to recolonize those habitats frequently. All species, however, must be able to colonize new habitats after global disturbances if they are to persist over geological time scales (localized vs. catastrophic) are two factors that have acted in the selection of reproductive strategies of corals". That was the whole basis of my hypothesis, stated much more intelligently than I had put it. Brooding is well and good in the short-term, but we're looking for a long-term solution.

Smantz then goes on to explain the three survival strategies, which can be summarized as: 1. Tolerate high adult mortality rate with a high local recruitment rate, 2. Resist physical disturbance by creating more durable skeletons, and 3. Have a high rate of fragment survival when a colony does break. In essence, I was proposing a fourth survival strategy based on mobility through broadcasting.

I was incredibly excited when I read that page. It made me feel like I was on the right track, that there might be something to what I was saying. Joe said he actually enjoys when student hypotheses are wrong, almost prefers it because of the learning that occurs in error. I didn't feel like I was going to be part of the scientific community long enough for my error to have value. If I was right about that, being at least partially correct was important. Once I had my grounding, I turned to other papers for my independent variables: temperature, pH, and salinity. As we already know, coral bleaches within a 2-degree Celsius change. Coral also suffers from increased acidity (the exact levels vary by species) and salinity below 23 ppt (parts per trillion). With this information I was ready to head to the Caribbean, science-wise, anyway. As it would turn out, I had a lot left to learn before I was ready to go to sea.

Chapter Seven:
Diving In

I have a tattoo of Bear Island in Lake Winnipesauke on the inside of my left leg. I got it when I was studying abroad in Berlin my Freshman year. My grandfather, Mom's dad, had been sick for a long time, and unfortunately he died while I was away. I wasn't really sure how to deal with this, my first significant death, so far away from my family and mostly alone in another country. A lot of people asked if I wanted to go home, but I said no. It was tempting, don't get me wrong, but even if I wanted to go that would be money no one really had to spend on flights. If I'd left, I'm not sure if I would've been able to come back, so instead of going home, I got a tattoo.

Bear Island was a place Grandpa used to take the whole family camping when I was a very, very small child. It's the kind of thing a lot of us *think* we have memories of as adults, but those memories might just be mental images of stories that have been told and retold. To get to Bear Island, you had to take a boat, and Grandpa had a speed boat he loved to drive and take out

fishing. I feel like I remember sitting on Grandpa's lap and steering toward the island myself. Mom likes to tell that story. Grandpa wasn't exactly an emotionally available man. His uncharacteristic softness with me was something that fascinated the rest of our family. To me, that was just Grandpa.

I know I don't remember this incident, because my brother was a young child, maybe six, and I was a toddler, but it's another Bear Island story my mom will probably tell for the rest of her life. Evan was playing down by the lake on the dock at the bottom of the stairs. Then he fell into the lake. Mom says Dad moved faster than she had ever seen anyone move, before or since, and jumped in the water, clothes shoes and all. My brother, unbothered, asked, "Can we go swimming, Daddy?"

"Not right now, buddy," Dad said as calmly as he could.

I'm not surprised that Evan swam in the literal sink or swim scenario. For one, my brother is just like that. Resourceful and clever, he thrives on doing things people think he shouldn't be able to. More practically, our grandmother, Dad's mom, had a swimming pool in her back yard for my entire childhood. Evan had spent every summer up to that point swimming in it, and probably most summers swimming in Lake Winnipesauke too. I'm also not surprised by the reaction to him falling in. My brother and I have always been well-loved. I remember learning to swim in Gramiss's pool. I was frustrated at being kept in floaties when I *knew* I knew how to swim.

All this is to say, I'm perfectly comfortable with the water. I'd spent my whole life in and out of it. I wasn't nervous for our upcoming diving lessons at all. I was ecstatic at the prospect.

The diving had been one of the biggest draws of this program. To learn how to dive, we went to the nearby-ish mariner school, the Massachusetts Maritime Academy, to use their pool. One Friday, our professors cancelled afternoon classes. We packed up our diving gear, spread out in six different cars, and made the trip over.

It was exciting to be putting on the gear. My only previous diving experience was those pool games with pieces that sink and you have to dive to find them. Mom was always very insistent about us not going out past our waists in the ocean; the turbidity of the water near where we grew up in New Hampshire would be less than ideal for snorkeling anyway. Snorkeling gear was new, as were the rash guards we had to wear to minimize the sunscreen we wore around the reefs. After we'd all changed in the locker rooms, we got a quick lesson on how to adjust our masks and keep them from fogging. Then we got split into groups.

Diving, as it turned out, was not the only thing we had to learn that day. On the off-chance C-283 (the 283rd class to sail the *Cramer*) was the class to finally do the ship in, we had to practice with some safety gear in the water. The gear in question was called an immersion suit. These suits give you added buoyancy if you end up loose in the water. They're bright to make you easier to spot, and they're insulating as well in case you're sailing in a colder region. The immersion suits are affectionately called Gumby suits, and they do sort of make you look like a more vibrant version of the cartoon character. They're full-body neoprene (a type of waterproof rubber) coverings. When they're all the way on, the only thing left showing is your eyes. The apparent problem is that, at some point during the process, you'll have giant unworkable gloves covering your hands.

Standing next to the pool, Captain Dave showed Hunter, Eliza, Zoey, Lisa, and I how to put on the suits. It's a more complicated process than you might initially think. To don these life-saving monstrosities, the first step was to lay them out flat on the ground. It was difficult to imagine at the time, but Captain Dave explained that if we were to have to put them on on the ship, conditions would be less than great, and staying standing would be hard enough without trying to put on the Gumby suits. What you do is lay them out, then sit down on top of them and put one leg in at a time. It's kind of like dressing a struggling toddler, but the struggle is with physics. Once you have your legs in, you can stand and adjust. Then, you put one arm in. Only one, because you want to keep a functioning hand for as long as possible. With your free hand you pull up the hood. After that, you have no choice anymore and you have to sacrifice your final hand to the rubber gods. Then the fun part begins: zipping the zipper on the front with your inhumanly large rubber hands. Honestly, Captain Dave should totally make that part a race. It was pretty hilarious to try to grab the zipper. Eventually, we all managed it.

After that, we actually had to get in the water with them. We were instructed to fall backwards off the edge of the pool. This would minimize the amount of water that would get into the suit. If we were actually lost at sea, water getting in the suit would be an issue. Cold could be a problem, though that was less of a factor where we were going. Chafing from the salt, however, would still be highly unpleasant. People have been found with some pretty nasty injuries from the salt scraping against their skin for days at sea. The ideal would be to lower ourselves into the water without dropping at all, but as we've already explained, if the suits are out conditions are not ideal, and we likely wouldn't have time to lower ourselves down the ladder of the ship.

Activities like trust falls are not a strong suit of mine. I've never understood why. I was never afraid of heights. My brother, who was afraid when we were kids, would freak out about how comfortable I was with getting near the edges of cliffs when our dad would take us hiking. Jumping from a height, however, has always given me pause. In my defense, there's a big difference between looking down over a pretty view and having probably undeserved confidence I won't fall, and actually taking a leap of faith. The height from the side of the pool wasn't much, sure, but I couldn't see that with my back to the water. I tried to imagine what it would be like if we were actually on the ship, angry seas rolling, thunder crashing, the only real light from lightning splitting the sky, and I guess I did a little too well because I hesitated. The rest of the group was waiting for me though, so I closed my eyes and fell.

Of course it was nothing. Minor drop into a pool, little splash, no rolling waves or lightning in sight. Captain Dave gave us a few minutes to get used to the feeling of moving around in the suits, then started teaching us what we would actually need to do. If we had a life boat available, fantastic. Captain Dave would pull himself into the boat, then help the other strongest person there, Hunter in our case, into the boat. The two of them would then help the rest of us up. I mentally prepared myself then for the idea that no one would be strong enough to pull me into the boat. I am not exactly a light person. We also learned what to do if there was no life boat, a prospect that got less scary the more we learned, though it was surely the worst case scenario (other than getting stuck in the ocean without the suit or the life raft, which would probably kill you too quickly for you to worry). We learned a few formations, including just sticking together in twos and threes. It was basically synchronized swimming with really high stakes. The larger a shape we were able to make, the more visible we would be to other ships that

may be able to rescue us, and the less appetizing we would look to any large predators. I remember one formation that included all of us had us linking arms and facing out so we could all see what was coming from around us. There was one formation that sort of stacked people together. It let us be a human raft for anyone who might be sick or injured or in worse condition for whatever reason, so they would at least be out of the water.

After the serious training was done, Captain Dave got out while we were all still bobbing around having fun. Trying to swim in the suits was an interesting experience. I didn't move at all how I expected to. By the end, I think we'd all gotten more water in our suits than we would want at sea. Part of it was from playing around, but part of it was a testament as to why those suits had been retired from the ships. Before we got out, Eliza asked Captain Dave to take a picture of us. We gathered together in an orange line of blobs with faces, and waited… and waited… After some explanations to Captain Dave about how Eliza's phone worked, we had probably one of the funniest pictures to come out of the trip and got out of the water. It was time to switch to what we all thought we were there for.

Adjusting our masks, as we'd learned to when we arrived, was only the first step to diving. There was much more to snorkeling than I'd realized before, and the most important lesson we had to learn was how not to drown ourselves with our breathing tubes. Some people had higher quality gear that was designed to keep the water from getting in in the first place. Hunter, a certified diver, was well ahead of the curve with everything. I would later learn Ariel was the same. I, on the other hand, had just gotten snorkel gear for the trip. Based on the recommendations in the materials list we were sent before going to Woods Hole, I had gotten

mid-ranged equipment that would probably last me the trip, but not much past it based on how often we would be in the water. This equipment did not have fancy anti-water magic, so I had to learn to clear my snorkel. Every time I dove, water flooded it. When I came up, I had to push a massive breath out to clear the airway before I could breath in, just like a whale when they come up to the surface.

We learned in stages. First, we were told just to get used to swimming in the gear. Then we were given slates, which we would use under water to communicate with each other. We could write on them in pencil, then erase them later. They would also be used for taking count once the research started, so we had to be prepared to budget space. For the moment, we were mostly holding onto them to learn how they would affect our swimming. Then we were given pipets to practice with, which was really only in case we helped with Corrine's research. We devolved into a light "water gun" fight. To my mortification, I got Joe with mine, trying to include him and not realizing he was holding a camera, which thankfully did not get wet. Other than that moment, which will haunt me at randomly-appointed 3AM's for the rest of my life, learning to dive was smooth sailing. Right up to the point we actually had to dive.

Equalizing is the term for adjusting to the pressure changes that occur when you dive. If you've ever flown, you've had to deal with this to some degree. Even just driving up a mountain you experience it. The feeling of your ears popping is equalizing. In those cases, the pressure on you is decreasing. When you dive, it increases. Joe told us that we should hold our noses and sort of blow out a harsh breath. This would pop our ears and help our heads adjust to the pressure. I

was familiar with that idea, had done it on planes during the landing. We were to do it once right before we dove, and then when we started to feel the pressure under water.

This was all well and good in theory. In practice, there was a giant mask on my face. The first problem I had to overcome was flooding. Every time I grabbed my nose, I broke the seal on my mask and flooded it with water. I came back up sputtering. There are few feelings I hate quite as much as water up my nose. Something about the way I was grabbing my mask was wrong, but it had to be possible to grab it correctly, because my crewmates were doing it. Eventually I found out that if I came at my nose from a downward angle and kept my grip lighter, I could equalize without flooding my mask.

Once I had that figured out, I managed to dive deeper. Still, for some reason, equalizing just wasn't working for me. I would dive, hold my nose, blow out, and the pressure would still build and build and build. I finished my dives, but I came up with my ears ringing. Again and again I tried to no avail, until it was clear that something was wrong. It was taking longer for the dizziness to fade, and Joe and Corrine noticed I wasn't doing so hot. They cautioned me against hurting myself, and I hung out at the edge of the pool talking to them about the problem. As far as we could tell, it seemed like I was doing everything right. Joe suggested not waiting for the pressure, and instead equalizing at regular intervals. I agreed to give it a try, and went for it as soon as I could see straight again.

Unfortunately, equalizing more frequently brought its own set of problems. Blowing out air more frequently than I needed to kept my head from hurting, sure, but it was also a waste of breath. The more frequently I equalized, the less it felt like I could hold my breath. I had the

same problem of not being able to dive far enough down, but for a different reason. Joe insisted it wasn't important for all of us to be able to dive all the way down, because as long as some of our team could reach the bottom, we would be able to collect everything we needed together, but I wasn't satisfied. To me, there was no reason I shouldn't be able to reach the bottom. I was doing something wrong, and I was going to figure out what it was. I went back to equalizing just when I felt the pressure start, but had the same problem of my head hurting. I kept diving anyway. If I did it enough times, I would find whatever little moment, whatever idiosyncrasy, was keeping me from equalizing properly.

The day's lesson ended before I managed to make any real headway. I went home trying not to feel defeated. We still had at least one more day in the pool to look forward to. Honestly, it wasn't too hard to forget my frustration once I was sitting on the couch. My head really hurt. I remembered the first time I had ever been on a plane. I was thirteen, headed to Stanford University to take a creative writing class. Dad and Marie dropped me at the airport, put me through security, and sent me off on my own. I was fine on the way there, but for some reason the landing to come home got me. It felt like someone had stuck a bicycle pump in my ear and blown up my head until it was just shy of popping. At any moment, I was sure it would burst. Knowing there was nothing anyone could really do for me, I tried to be fine. My head was bowed, in my hands, and a flight attendant asked me if I was okay. I nodded, but I doubt it was convincing. By the time we touched down, tears were streaming down my face.

Hunter asked if I was alright. I told him about my headache, and explained the utter frustration of the day. "If I could figure out what I was doing wrong, it would be fine. The really

messed up part is that, talking to Joe and Corrine, it seems like I'm doing everything right and it's not working anyway."

We talked about what diving was like for me. We went through the process step by step. Equalize, dive, feel pressure, equalize, pressure doesn't stop, keep diving anyway, equalize again even though it doesn't help because Sisyphus has nothing on me, come back up dizzy, repeat.

"Are you going back up before you equalize?" Hunter asked.

"What?"

Turns out I was missing one tiny, if crucial, step, one I certainly wouldn't have figured out on my own. Continuing to dive while you equalize doesn't actually give you the space to equalize. Instead, you have to pause and go up just enough to be above the pressure level that caused you to start to feel pain, maybe a foot or so. Then you equalize and you can start going back down again. I'd never so much as hesitated in my downward plunge. I'd been gaining depth even as I'd been trying to equalize. Now I would be ready. I hoped.

A couple weeks later, we had our final diving practice. This practice came after some more decisions about data gathering had been made. At each site, we would be broken up into four teams: Fish Team, Invertebrate Team, Substrate Team, and Environmental Team. Each team would be responsible for different parts of the data collection, and we were all going to practice as each type of team. We would rotate through the different teams, so we all needed to learn to do a little bit of everything. This trip to the pool was practice for those technical skills, and for the choreography of how the teams would work together in the water. Substrate is basically the term for the sea floor. It encompasses rocks, sand, shells, etc. The substrate team would have to

be the quickest, because they laid the transect we were working along. The transect was a 30 meter (roughly 98 foot) long measuring tape. It would help keep our data collection consistent, and we had to hold it to the sea floor with little weights. The Substrate Team was also responsible for laying quadrates, squares of PVC piping, along the transect. These squares would be areas where coral counts would take place. That would happen later, however. The team would photograph one quadrate, then pick it up and move to the next location. These were the jobs I struggled to learn how to dive for.

The Fish Team, as you might imagine, were responsible for taking counts of fish, and the Invertebrate Team for counting invertebrates. Both of these groups would swim the transect, but they would also do roving surveys of the whole dive site. The Environmental Group was in charge of measuring environmental factors about the water, like pH, temperature, and salinity. There was a little device they had to swim around with to take some of these measurements. Others were gathered from water samples that would be analyzed back in the lab on the ship.

Before we practiced any of that, however, we had time to swim around and get used to the equipment again. I headed straight for the deep end of the pool. It was the moment of truth for me, my chance to try Hunter's advice and see if I could actually dive, or if I would be stuck forever lingering at the surface. I took a deep breath, equalized, and went vertical. About a third of the way down, I started to feel the pressure in my ears. I stopped, let my torso float up just enough to make a small angle, and equalized again. To my utter amazement, it worked, and I kept diving another third before the pressure started up again. Float, equalize, dive. It was the

missing piece I had been looking for. I came back up grinning so hard I couldn't keep my snorkel in my mouth.

Chapter Eight:
The First Goodbye

Sometimes it was easy to forget that we were going to school. Even as someone who mostly likes school, an unfortunately large part of my experience with it has been monotony and tedium. It didn't feel that way quite as much when I got to college. School became more voluntary than it used to be. Studying for a career I want is much better than taking what felt like a bunch of random classes. Still, the end goal can feel intangible and distant, and after a while each new class can start to feel a little bit like the last. SEA felt decidedly the opposite. Every class we took had a direct purpose and implication for something we were going to be doing in the immediate future. It felt less like being in school and more like training for something. Captain Dave told us, in one of his first classes with us, that as you get older you start thinking differently about the exchanges you make with the world. He didn't want us to think of SEA as courses we had to complete. He wanted us the think of the courses as experiences to extract something valuable from. For the most part, his advice felt like it fit the program.

Finals were a stark reminder that this was a school program, and we did still have to jump through certain academic hoops. Finals are typically the *final* thing you do in a semester, but the whole "going to sea" concept necessitated flexibility with the traditional academic schedule. Writing research papers from scratch in the middle of the ocean with no resources aside from the whispering of the seagulls wouldn't have gone well for any of us, so for most of our classes finals came at the end of Woods Hole instead of the end of the semester. Tim gave us a research paper. For the amount of time we had to do it in, it was kind of a lot, but it was interesting. Amelia wrote about the public perception of sharks. Hunter wrote about whaling. I don't remember what Mara's project was actually about, but I do remember the velociraptor puns (velociraptor over distanceraptor equals timeraptor!). I wrote about pirates as masters of PR. By the end of the paper, I hadn't quite managed to convince Tim I was right, but I did have a lot of fun writing it and got a good grade. I don't remember what Mike's final was, but I would bet money it had to do with the fisheries council.

Our final assignment in Leadership in a Dynamic Environment was to successfully complete a chart. Charting turned out to be more difficult than I thought it had any right to be. That's to say, it involved way more math than it seemed like it should. In my mind it should've been north is north, south is south, don't hit the big rock and you're golden. The problem is, sometimes compasses aren't totally right. There's a big compass on a ship called a steering compass. This compass is mounted near the helm, and it's in large part what a helmsperson looks at to know they are steering the correct course. This compass sometimes experiences magnetic disruption. This disruption can be caused by the metal in the ship, but we don't always know what causes it. Earth's magnetic poles also undergo gradual shifts, so True North and Magnetic

North are not the same. It is important for navigation to be able to switch between these various compass measurements to understand where you're actually sailing.

Despite how difficult it was, it was one of the least frustrating class experiences I'd had because of how willing Captain Dave was to help. Captain Dave lived in a house very near campus, and before leaving us with the charting project for the weekend, he wrote his number on the white board and told us to contact him if we needed any help. I think Diana was the one who used it. Regardless of who actually sent the S.O.S., Captain Dave spent a significant amount of time on campus that Saturday, helping us with our homework. The assignment's due date still got pushed back a few days. We'd all put in our best efforts, but the power went out on campus that weekend, so we could only work for as long as the light lasted. It wasn't enough time to finish in. Captain Dave understood that and gave us an extension.

A lot of us were up in the class building working when the power went out. For a while, I tried to find a puddle of emergency lighting to work in, but it just wasn't enough. My eyes had to strain, and any time I shifted I seemed to block the light from my own work. When I came out of the classroom, I found a group of my crewmates, Diana, Ryleigh, Ariel, Mara, Amelia, Zoey, Rose, Harper, and Eliza, if I remember correctly, playing a card game. They invited me to join. It was a nice reprieve, sitting on the fluffy couches and chairs in the common area of the class building playing together, with how busy we'd all been lately. It was the kind of game where the cards give scenarios, and you vote on who would be the most likely to do something in a certain scenario. Most of them were silly questions, like who would be most likely to die if stranded on a deserted island (me), or most likely to be the sorority girl in a horror film (Harper, the actual

sorority girl), but one of the cards asked who was most likely to stand up for someone else. Ryleigh and I voted for each other. It was a nice moment of recognition, and it made me feel a bit better about everything that had gone on between us.

Power outage aside, our finals didn't wait for more than an evening. In Directed Oceanographic Research, we had to have a sort of finalized version of our research papers. That was the one paper that followed us out to sea, because we couldn't finish it without the data from our research. Still, the first part of the paper would be a little difficult to get together without having the resources, so our final for that class was about making sure we had everything we would need. Maybe that one was more of a midterm. Joe put all our resources onto a drive that would be accessible on the ship. The final I really dreaded was the one for our basic oceanography class. It was the closest to a traditional test, a packet of science questions, but we took it home to work on over a couple of days. We could use notes and textbooks, but no internet. Given those resources, maybe I shouldn't have worried so much, but it wasn't like we were dealing with simple yes or no questions here, at least for the most part. There was some interpretation involved and, luck be with me, some math. It had been made clear when I was applying to the program that failing any of these courses would result in not being allowed to go to sea. That was just about the only thing on my mind while we were taking this final.

There was also a lab portion. It involved examining specimens from previous trips under a microscope and identifying them. There were guides provided to help us do so. Joe had shown us through the lab beforehand. When he asked if anyone had any questions, I didn't. I thought I understood everything I was supposed to do. I thought I remembered how to use a microscope,

something that seems so simple now I sort of can't believe I didn't. Tests have always made me nervous, to the point of various teachers over the years giving me their personal strategies for calming down, and this test had higher stakes. I'm still not sure if the nerves made me forget, or it I just forgot, but either way when I had the test I stood over a microscope getting increasingly frustrated as I failed to make it work. Was it too focused? Not focused enough? Was the knob I was using actually the focus, or was I spinning it for nothing?

Luckily, I wasn't the only person working on ID's in the lab that day. Hunter was there too, and he noticed the way I was scowling at the microscope. He asked if I needed help. I only hesitated for a minute before accepting. It's not like he was going to identify anything for me, and Joe had said we could talk to each other about the test so long as we didn't give each other answers. Hunter walked me through setting up my first sample, then left me to it. After that road block was eliminated, the ID's was the part of the whole test I was most confident in. It was just like the egg drop in high school physics. Formulas and complex current pattern analysis were going to mess me up, but as soon as the science became tangible, I understood. It was a relief to turn that packet in to Joe and be done with it. I still had to finish my pirate paper, but that at least was familiar territory, even if the style and citations were a little bit different. I didn't have any worries about failing that course.

With all of us being so busy that week, we dropped the ball on family dinners and hanging out. I didn't notice to be bothered at the time; I was just as busy as everyone else. Still, it was a very different atmosphere. Usually, it felt like we were making strides toward something together. Now, it felt like something was looming as we moved around like ghosts and scavenged

small meals and snacks from the kitchen. Harper was our saving grace. More than once, as we were all scattered about campus frantically scribbling or reading or typing around dinner time, our phones went off with a group chat notification from her saying, “I made STIR FRY, get your butts down here!” Without her, we would’ve starved. She brought us together, if only briefly to descend on the stir fry, and made the old “passing like ships in the night” metaphor feel a little less apt.

I almost wished for the work back once I’d finished it. It had distracted me from what was really looming. We were going to have to say goodbye to each other for the first time. We were all going home, at least long enough to get ready for the next leg of our journey. All of us had been more or less attached at the hip for six weeks, and now we were separating. I worried, I guess, that the magic that had brought sixteen very different people together might wear off in the time apart. We were aware that the program was self-selecting, that our friendships weren’t quite as random as they seemed, but was that single converging point of interest really enough, or was it just the intensity created by literally never being able to get away from each other? I was a little afraid to find out. My nerves about this part of the program ending were met by the more reasonable people around me with an attitude of, “Dude, calm down, we’ll see each other next week.” I didn’t know at the time how to articulate why that not-quite-week in between felt like so much to me, but I’m not sure I would’ve wanted to if I could. No need to infect anyone else with my bizarre worries.

While I might’ve been the only one so stressed about it, I was not the only one feeling some nostalgia over Woods Hole. When things had wound down enough that we only had Tim’s

paper left to worry about, we planned our final party. It was the last Friday or Saturday of this leg of the program. We decided to end where Mike had us begin: at the Knob. Harper and Diana packed us a picnic that was mostly snacky things: grapes, crackers, a wheel of brie. Then we all piled into cars with the goods and headed over. The hike to the Knob was short, just like it had been the day Mike brought us. The ocean was on almost all sides. There wasn't quite enough space, but we ignored the signs and spilled over onto the surrounding rocks. We had some snacks, took some group pictures… it was nice.

It's weird, now, writing this. It was such a poignant moment, our last big hurrah at Woods Hole. We were going to Grenada next. Nothing would be quite the same, and while we were all excited, the change was scary, at least to me. I feel like I should be describing something monumental. The size of the emotion feels like I should be rambling on for pages and pages to capture it just right. In reality it was a small, comfortable gathering. After, we went to the grocery store. The whole time, it had been suggested that we not go to the store together. Sixteen people trying to be organized enough for an efficient trip would've been a nightmare. Apparently, our professors were speaking from experience. Our crew had been relatively good at budgeting, so we actually had leftover money, so all sixteen of us got $15 to spend how we wanted, and we scattered across the store to gather snacks.

After that, it was back to campus. I had finished my essay for Tim earlier. Some of us went back to writing it. The rest of us continued the festivities in the form of one last dance party, one last set of dance lessons from Hunter, one last vision of Jordan bouncing erratically across the room. The next day, we did our round of course evaluations. We packed our things. We all

went home. I drove Amelia and Ryleigh. Amelia, we dropped off about half-way in Boston. Ryleigh's sister met us in my home town. We loitered in the local pet store for a while, playing with the parrots until she got there.

I drove home feeling wrong. In high school, most of my friends were my older brother's friends. They had been his friends first, and they were all in his year, juniors when I was a freshman. Growing into high school, I found that a lot of my middle school relationships were kind of unhealthy. My high school relationships weren't flawless either, but everything was better because Evan was there. Until he wasn't. Until none of them were. They all graduated, predictably, two years before me. With them gone I had two close friends left, then one going into my senior year. When my brother and our (or were they just his? I was never really sure) friends graduated, there was a huge lead up, hugs and tears and promises to keep in touch. Then we all just sort of… faded. Coming back to my hometown has felt wrong ever since I started college. My family feels like home, but the place doesn't. It feels like I'm in limbo.

Part of me felt like us leaving Woods Hole was like Evan and co. leaving high school. It wasn't. It was actually a lot more like going home from Bard for Spring Break. It was a very temporary pause and we were going to see each other very soon, right back in the thick of things. It just didn't quite feel that way, driving the familiar back roads I had traveled millions of times in my life and pulling into the driveway. It felt like everything had stoped. SEA hadn't seemed like it could be real before I went. Now that I was away from it, I was waiting for the hidden cameras. I sat in the car for a minute, just breathing, trying to shake the feeling off. Everything that happened really had happened, and it wasn't over. Not yet.

I got out of the car. I went into my house. I hugged my dad.

Part Two: Grenada

Onward now we go

Traveling to lands afar

A new adventure

Chapter Nine:
Reunited

It was a surprisingly quick drive from my hometown in New Hampshire to Logan International Airport in Boston. Typically, the drive is about an hour, but Dad is insane. That's not to say he doesn't drive safely. The insane thing was the timing of the flight. Dad had to get to work no later than 7:30AM. He had booked me a very early flight with the intention of driving me to the airport, then going to work straight from there. Because we were awake and heading to the airport far earlier than any human being has the right to be awake and functional, the roads were pretty much clear. It was the least traffic I have seen in any city in my entire life. I wasn't totally ready for the drive with Dad to be over when it was, because I had been expecting it to take about twice as long as it did. I don't think Dad was quite ready, either, though he never seems one hundred percent ready when he drops me off at an airport. Usually, he watches me get my tickets, then carries my bag all the way to the security gate. There are last-minute checks of the last-minute checks that have already happened - yes I have my passport and know my flight

number, yes my phone is charged and I'll text you when we're taking off and landing, yes I remembered to bring the extra charging block, no I don't need to go to the bathroom one more time while you watch my bag before security. It's funny. Coming from anyone else, I think this final barrage of concern would bother me. It doesn't when it's Dad. I know he thinks I'm capable; sometimes he's surer of it than I am. I also know he loves me.

An airport is an easy place to feel small. There are so many people, all going somewhere in a hurry, most seeming very convinced their destination is more important than yours. Men in business suits are the worst. They never get off their phones, and can never pause to say a kind word to the poor soul making the coffee for their red-eye. I once saw a grown-ass man in a business suit throw a temper tantrum at an airport Starbucks because his complex drink order couldn't be made in time for him to be on his plane in the next five minutes, a result of his poor planning and not the fault of the barista. These people don't contribute to the feeling of smallness half as much, though, as the realization of how big the world is. Hundreds of people going on and off planes flying all over the world at all hours of the day. I could probably spend every day of the rest of my life traveling and not see it all. Sometimes, the idea of seeing any of it feels too overwhelming, and it occurs to me it might be easier to quietly miss my flight and have Dad come get me. When I went to Berlin my Freshman year, I hadn't quite decided if I was going to get on the plane or not until the boarding call was made. The feeling has never been quite as intense as that first time, but it's always there, at least a little.

This time, there was no room for doubt. Amelia and I had booked the same flight completely by accident. It was a small miracle, really. Through a series of minor errors, Amelia

and I were both arriving in Grenada the day before the program started. When we realized what we'd done while comparing flight numbers with the rest of the group in Woods Hole, we planned to meet at the gate in the airport and make the trip together. Maybe the airport wasn't the best place to remember Captain Dave's lesson about error chains, but I did. One of the big examples had been about a plane crash. The situation was a little too on the nose for me not to think of it. It was alright. I'd been on planes plenty of times before. Statistically, we were more likely to be fine than not, and if we weren't, well, I wouldn't exactly be around to be bothered by it. Waiting for the plane to board was a much more palatable experience with Amelia than it had ever been by myself. We grabbed breakfast and caught up on our brief time apart. We weren't quite lucky enough to get the seats next to each other, but we'd been smart enough to bring books. Our shared love of reading was one of the earliest things Amelia and I bonded over. She was reading a fantasy book, *Graceling*, in Woods Hole. When she finished, she handed the book off to me. It was fantastic, and we spent a good deal of time obsessing about it together. I think she might have started me on the sequel on the flight over, but I also had a couple of *Star Trek* books in my backpack.

We had a layover in Florida. We didn't have time to take in the scenery, though. Our connecting flight was at the other end of the airport, and it was a sprint to reach it in time, or so we thought. That flight ended up being delayed for quite some time. It was for a reason that didn't seem quite right, like there not being water on the plane. The grapevine was of the opinion that a passenger on the previous flight had thrown up and it took a while to clean. Either way, the delay was a stroke of luck. When I'd left home there was snow on the ground. Getting to Florida was already making me feel too hot in what I was wearing, never mind the Caribbean. The delay

gave me enough time to change. After brief deliberation, Amelia and I decided there was also enough time for lunch. I went to scavenge, and Amelia stayed at our gate in case our flight was called sooner than they thought. I ended up grabbing us a pre-made sandwich to split and one of those snack packs with grapes, cheese, crackers, and nuts. I had wanted to find something a little better, but that was the best I could find in the radius we'd agreed on. We had just enough time to eat before the plane started boarding.

I like being on planes. There's something that feels almost meditative about it, especially if I grab a window seat, which I managed to do for this flight. It was especially true with this flight being almost entirely over the ocean. I stared down at the waves, which looked so small from up there, and tried to imagine them as something I would be riding in about two weeks. It was hard to imagine, but most things like that are hard to imagine on a plane, I've found. Planes connect the world, more than it ever was before. The class before us was sailing the *Cramer* to Grenada while we were flying. The same trip that took me about a day took them probably a little over a month. Despite the hyper-connecting function of planes, I always feel very disconnected while I'm on them. It's something that doesn't feel like it should work, hurtling in a metal tube through the sky tens of thousands of feet above the Earth's surface, but it does work. Communications are cut off. It's just me, the plane, and thoughts of where I'm going, and maybe where I've been.

I could tell when we were getting closer to the Caribbean. The water changed. All my life, I've been used to the North Atlantic with its dark waters and rolling waves. As we started to fly over the Caribbean Sea, the waters went from the deep, shadowy blue to an almost teal color.

The water shifted in some places from teal, to cerulean, to ice blue. It was fascinating to see the different colors butt up against each other but not mix. The sea itself was calmer, but it made my heart race more than the rougher waves I'm used to picturing when I think of the ocean. This strange new sea with its calmer waves and bright colors was going to be my home soon enough.

Grenada came into sight almost sooner than I was ready for. The view of colorful buildings dotting the mountains captivated me. The bricks of vivid color that represented houses were concentrated at the feet of the mountains, close to the water. They became more sparse the further up the mountains you looked as a deeply saturated emerald green took over the landscape. We'd seen pictures of it before in Joe's presentations back home. The pictures didn't do it justice. I find that pictures never do anything justice. There's a special type of feeling from seeing something in person. It's an overwhelming joy, a buzzing excitement.

When we landed, I was glad I'd had the time to change at the airport in Jacksonville. It was oppressively hot. Amelia and I headed to the baggage claim. Navigating customs was relatively easy, especially together. Amelia and I were going to stay at an Air BNB for one night before the program began. It was something she set up beforehand, and when we realized we were coming in at the same time we arranged for me to stay there with her instead of sleeping on our professors' couch for a night. I felt a little bad when Joe and Corrine met us at the airport. I thought I'd communicated the new plan, but I guess my email didn't go through right. They claimed not to be upset, though. They were just glad to know we'd made it in okay.

The two of us found a man holding a sign with her name, the taxi driver that our Air BNB hostess had arranged. We found out later he was her husband. The taxi driver gave us a mini tour

as he drove us further up the mountain. He pointed out the port, which I fixated on, thinking about when the *Cramer* would be docked there. It wasn't very visible from that distance aside from towering masts, but that wasn't enough to stop my imagination. He also pointed out the jail, joking about how the prisoners got the best view. Amelia and I exchanged looks as we went further and further into what seemed like the jungle. I have to admit, he wasn't wrong about the view. The further up the mountains we went, the more stunning it was. It was almost like the view from the plane, but in reverse. We disappeared into the jungle with its large emerald leaves. The blue hombre ocean seemed to stretch on for miles, and from our new height and perspective, the houses almost looked bright kaleidoscope beach sand as they stretched toward the sea.

The house was a cozy place way up in the mountains. I think we both would've liked to explore the area, but once we got to the Air BNB we were both tired, and pretty far away from anything anyway, so we settled for staring out the window instead until we decided to settle in and watch some TV. We had WIFI, and so we had my mom's Netflix. For a while, Amelia and I watched *Nailed It.* When that was done, I decided I finally needed to watch *The Meg*, a movie about the megalodon coming back from the depths to haunt humanity. Their explanation for the meg being alive was by far the worst conspiracy theory I'd heard. According to the movie, the colossal shark is trapped under a magic cloud at the bottom of the Marianas Trench, and it can live down there because warm water from the time it ruled the seas is trapped down there as well, which is… not how temperature works. Amelia had seen it before and didn't want to watch it again, but there had been too much discussion about it for me not to see the movie. It came up in connection with Amelia's shark paper, and when I made the mistake of asking why the meg couldn't actually be in the oceans, I got a whole rant from Mara. All-in-all, that movie was a loss

for the scientific community. I wanted to watch it anyway, and talk about a glorious train wreck. Nothing in it made any sense. Either way, it was a fun movie. I hadn't come for the scientific accuracy.

At some point during the night, Amelia and I realized that we were hungry and had no way of getting food. She was ready to accept our fate, but I am a baby. The idea of waiting until we got to the resort where we were staying for the two weeks around noon the next day was not an idea I found acceptable. Luckily, I'm also determined and clever. I google searched until I found a food delivery service called KariBites. With a little finessing, our dinner made it to the door. I had a curried chicken meal, which was pretty delicious. Amelia and I both only ate part of our food that night, to make sure we had something the next morning.

When morning did come, we found ourselves to be incredibly lucky. The woman who ran the Air BNB brought us two coconuts from a tree on her property that she had sliced holes in the top of. It was our first taste of coconut water straight from the coconut, which may be what ambrosia is made of. If you've had bottled or boxed coconut water, you are thinking of the wrong thing. During my first semester back at Bard after all of this, I picked up a boxed coconut water from one of the school's secondary dining halls in an attempt to pull a little of SEA back with me. At the first sip, I was utterly disappointed. It wasn't that it tasted bad. The problem was, with the fresh coconuts still so fresh in my mind, it tasted wrong. Coconut water straight from the coconut doesn't have the consistency of water; it doesn't have the consistency of juice, either, though the stickiness of it has me wanting to make the comparison. It reminded me a bit of a simple syrup, though not quite as thick as I imagine that would be if you drank it directly. The

taste was sweet, but not overwhelmingly so. Something else cut through it, a flavor sort of like coconut meat but not quite. It had a certain tang. The whole of the time we were on Grenada, I never passed up an opportunity to get my hands on some coconut water.

It turned out it was a vey good thing that Amelia and I had ended up traveling together, because between us we just barely had enough money for the cab ride to the resort, True Blue Bay. Checking into True Blue Bay was an experience by itself. I'm the daughter of teachers. We're a big camping family. Every year, Dad, Marie, Evan and I go on a camping trip just an hour and a half or so away from home in northern New Hampshire. When Evan and I were kids, we shared the slightly bigger tent and my parents took the smaller one. Evan and I could each fit a twin-sized air mattress in that tent. We stayed up late together, telling each other stories… okay, mostly I bugged *him* to tell *me* stories. As we grew up, our parents bought a larger tent and my brother's girlfriend (now fiancé) started to join us for the annual trip. My brother and his fiancé took what used to be my and his tent, and I took what used to be our parent's tent. For some reason, I ended up much better at setting up than he did. Usually, I set my tent up in about fifteen minutes and then help Ev and his fiancé with theirs, a fact which seems to vex him.

A resort in the Caribbean was a little outside of my normal experience. I was in one-percenter territory. Check-in was normal, no different really than a motel, and I learned I would be rooming with Rose. Porter service was what really tripped me up. When a man came to show us to our rooms, and helped Amelia with her bags, the thought that it was part of his job hadn't entered my mind; I just figured he was being nice since she had more to carry. I picked up my bags, ready to follow.

“You don’t want my help?” he asked, tone teasing. “ You don’t want my help?”

I relented and relinquished my larger bag, though I held onto my backpack. He didn’t press on that, and instead lead Amelia and me up the steep hills to our rooms. He put my bag down at the foot of the path leading up to my room and walked on to bring Amelia to her room, which was closer. I picked up my bag and walked the rest of the way to my room. When I noticed him coming back, then giving a slightly exasperated wave when he realized I’d made it to my own door myself, I figured I might have made a mistake, though not one I could bring myself to regret. I’m not one for learned helplessness, and waiting on someone else to do something I can do perfectly well myself didn’t make much sense to me. I got a warm welcome from Rose, who was getting ready to meet some of the others at the pool. It was a good day for it; then again it seemed like every day would be a good day for it. The brightness and heat in the middle of December still felt surreal. I got settled in and went to meet them as quickly as I could, making sure to spend a significant amount of time on sunscreen.

By the evening, we all congregated with our professors down at the *Dodgy Dock*, the seaside restaurant the resort owned. The restaurant itself was a dock. Anywhere you could walk on it was over the water. Everything was made of soft grey wood. To the right was a dining area that typically hosted breakfast. To the left was a bar, where we had dinner. It lead out to a smaller dock that small boats could tie off to and join the restaurant right from the water. We met a hand full of people while we were at True Blue Bay who slept on their ships but came to the bar in the evenings to party. Most of us arrived at the restaurant at the same time, as per the program’s orders, and we created an indiscernible cacophony of glee. As the stragglers trickled in, they

were absorbed by our mob. It was an eventing of screaming and laughing and more hugs than you could count. It was almost like we had never been apart.

Chapter Ten:
Touring the Island

True to SEA form, the Grenada schedule was packed from day one. Instead of taking any amount of time to recover from the travel and the jet lag, we had to be at breakfast by 7:15 to leave the resort on a bus by 9:30. Our bus driver, Osmani, doubled as our tour guide, and became a stable presence on our visit. As we drove from place to place, he told us about life on the island. He talked about politics, about trying to get young people interested in combating climate change, and about the influence of tourism on day-to-day life on the island. Osmani's talks were our first real exposure to the lasting impacts of the American invasion of Grenada. When I asked Tim about this later, he told me that it's still a very sensitive issue, and not everyone wants to talk about it. Local opinion is still divided. Some call the U.S. presence at the time an intervention, some an invasion, and others still a war.

Our first stop was a mangrove reserve area. We learned about efforts on the island to repopulate mangroves along the coast. Mangroves are crucial to the marine ecosystem, as they

provide a nursery for several reef species, but they have been deforested in many locations to make more room for sandy beaches. While desirable for tourism, these beaches don't do much to give the island stability. Sandy beaches are much more vulnerable to erosion than forested areas. It was heartwarming to hear how invested the local community has become in the project. School kids take it upon themselves to protect the mangrove seedlings planted in the area and remind others to be mindful. We revisited the same nursery on a later field trip around the island. The mangrove nursery is part of a larger emphasis on the concept of Ridge to Reef. Ridge to Reef emphasizes the interaction between coastal ecosystems and the reefs off their shores. It's a mutualistic relationship, the same kind corals share with their symbionts. Mangroves provide nurseries for reef ecosystems, and barrier reefs protect the shores form harsh waves, slowing down erosion.

We actually learned most of the information we knew about mangroves from a later field trip. A woman only slightly older than us named Zoya Buckmire founded the Grenada Fund for Conservation with her father. Zoya also happens to be an alum of our SEA program. Zoya focused a lot on how to communicate the value of mangroves to the public when they seem like waste land to a lot of people. One such project included watch towers at the edges of the mangroves with identification material for all the different types of birds that take up residence in the area. This project has faced more difficulty. Local communities have been using the mangroves as dumping grounds for a long time, and convincing people to change their habits is no easy feat.

Our next stop was the fish market. It was an interesting and emotionally conflicting event. Many of us felt strange about being there, about taking up so much space and interfering with people who were living their daily lives. Sixteen students, plus Joe, Tim, Captain Dave, and Corrine meant we were always traveling in a group of at least twenty people, not counting Osmani. Even with the best intentions, it's hard not to take over a space with that many people. We had sort of done so once before back in Woods Hole, when we made our group trip to the grocery store. We just took up a massive amount of space, and even trying to be orderly and respectful, that many voices together tend to rise. It wasn't so bad in the grocery store back home. That was spread out, separated by aisles. The fish market is very different from any shopping experience I would think about in the U.S., or at least my part of it. At this point I've been to the Northeast, the South, the West, and the Midwest, but I wouldn't claim to have seen enough to be an expert on every culture in the Continental United States; there very well may be a more appropriate analog. The closest comparison I can think of is a farmer's market, but that's mostly because of the open stalls, the feel of the fresh air, and the immediacy of the food. The fish market was right next to the docks, and it was clear the food went from ocean to stall. The stalls themselves were packed into a row under an awning, presumably to protect product and people on rainier days. That's about where the similarities end. It was a much higher energy than I would associate with a farmer's market. There was more shouting and laughter and joviality. Despite the high energy, it was a physically small space, and it felt to me like our group was pushing other people out, however unintentionally.

Later, I asked Tim how he dealt with the weird feeling of intruding. Tim felt like it was necessary, and tried to be respectful about it. Maybe that was part of the problem for me; it didn't

feel necessary. I, personally, didn't have the skills to make the experience worthwhile, and the fish in the market felt a good deal removed from the project I was working on. The fish up for sale looked so different dead than the lively, colorful creatures Joe had us memorizing. I couldn't identify any of them. Talking to people in the market, it didn't seem like they could see any significant change in the ecosystem. Tim's own time working in fisheries out of Boston provided a different perspective. In his own time, he had seen the size of yellowfin tuna, a species present in both areas, decline. While Tim couldn't speak for the stock in Grenada specifically, it was clear something was happening with that species of fish. If nothing else, the experience should've been useful for Rose's project on the range of the invasive lionfish.

I don't want to give you the impression that the experience at the fish market was entirely a bad one. It was a fascinating place to be. We had a lot of interesting and meaningful conversations with the locals about the fishery, and some of the workers let some of the students try scaling fish, an interaction spearheaded by Ariel and Alice. They seemed both surprised and delighted at how good Ariel was at the job. Joe bought some dried fish from the market that was eventually part of one of our lunches, and local candy to try on the ride to our next destination, a turtle reserve.

We had a little bit of down time to eat lunch and play on the beach before our contact on the turtle reserve arrived. The beach was almost exactly what you would expect to see in a tourism brochure: white sand as far as the eye could see, palm trees stretching toward the sky, and an electric blue ocean that faded into turquoise. Once lunch was done, we had a great time wading in the shallow water. Harper did a little more than wade and got absolutely soaked, and

Jordan and Zack had a race across the beach which Zack won. When our guide did arrive, he told us about the importance of Leatherbacks, the species of turtle this reserve is for. They can travel far into cold waters, and it is in question whether they are cold or warm blooded, but Grenada is essential to the species as a nesting ground. Grenada is also crucial to any scientific research about the species, as the time they spend nesting there is the only time they are known to travel to shallower waters. All of this was explained to us in a little barn-like building with benches lined up in front of a wall that they projected a movie about the turtles on. At the end we had a turtle quiz, which lead to the universal uncomfortable middle school field trip sensation of having experts ask you questions your teachers have taught you the answers to while your teachers watch you with a weird, expectant energy. I think between all sixteen of us we managed to answer enough questions to keep Tim, who had dedicated a significant amount of Woods Hole class time to turtles, happy with us.

After explaining turtles, our guide took us to see some fully-grown mangroves. It was fascinating to see them fully grown. I don't think before that moment I had properly appreciated the trees for what they were. Our first exposure to them had been a restoration project. Tiny saplings were being fostered to the best of their caretaker's ability. These saplings were held up by little tubes, what looked like PVC. They were thin, delicate things out there in the water. They could've been plants as easily as trees. The grown mangroves we saw later were, in their own right, a forest. They stretched tall. A different type of ecosystem had grown up around them. I'm not totally sure how to describe them. There was an almost swamp-like quality to them; the stillness the mangroves imposed on the sea water made a breeding ground for mosquitos, to our displeasure. Regardless, it was beautiful. We could see the roots coming from the trees down into

the water in some places, and the ground in others. You got an idea of what high tide looked like based on how high the roots went. It was easy to see how these magnificent trees provided a nursery for species that inhabit coral reefs. Unfortunately, we could also see evidence of why these ecosystems need to be protected in the form of plastic trash at some points along the edge of the trail.

After that, we got to go to a local chocolate farm and factory to learn how chocolate is made in Grenada. The farm was situated high in the mountains. We all dealt with our ears popping on the way from the seaside to the farm. Equalizing works for going up mountains too, as it turns out. The second we stepped off the bus, the air smelled like chocolate. I'd always thought that in my version of heaven, the air would smell like a campfire all the time; this was pretty good, too. The farm wasn't that large, and walking along the hill was easy. As we crunched along what seemed to be the carefully-made path, I was delighted to realize we were walking across the remains of old cocoa beans. I picked one up to smell, and sure enough the discarded bean shells were contributing in no small part to the smell of the air. The trees themselves were maybe eight to ten feet tall, and I could've reached out and grabbed a cocoa pod with very little effort, had that been permitted. Cocoa is actually very closely regulated. From what I can gather, this is due to sustainability efforts through Grenada's Cocoa Farming Future Initiative. The branches reached out from the trunks, providing shade. The leaves were a sort of oblong shape in the same vivid green that seemed to define the rest of the island's landscapes, and the pods themselves were equally striking shades of purple and red.

The farm's guide let us try cocoa beans straight from the pod. They were not what I expected at all. The outside was white and pulpy and sweet, and had a flavor I would almost identify as chocolate. The inside was a vivid purple and tasted bitter. Unfortunately, a delay at the turtle reserve meant we got to the farm too late to see chocolate being made. Any disappointment from that was easily forgotten when we were released into the store. In there, we got to try the chocolate. Each chocolate on offer had a little basket of samples you could try to decide what cocoa percentage you wanted. It was better than any chocolate I had ever had before. I bought some for myself, and also for my family back home. The fact that their chocolate made it all the way back home without so much as a nibble missing is the most self-restraint I have ever shown in my life.

Our last stop of the day was a festival in Grynville called Fish Fry Friday. We had to make our way back out of the mountains, down to the seaside, for the festival. The sun was going down as we rode the winding mountain roads. A space opened up in the ever-present sheet of green, and we could see the sun sinking toward the water. Osmani stopped the bus, and we crowded on that side, taking pictures and watching. I think we were all hoping to catch sight of the green flash. My knowledge of that phenomena came from the *Pirates of the Caribbean* movies. I was picturing something from the movie, big and dramatic, a flashbang across the sky, impossible to miss if only you were looking at the right time. None of us saw the green flash that day, but we did see a beautiful sunset.

We continued down the mountain and into the town. Osmani pulled the bus over on the side of the road to let us out. Our final destination wasn't accessible by car, let alone giant tour

bus, but he would meet us later. Our professors gathered us on the sidewalk, a process not unlike herding cats. The program was paying for dinner, as it did at the hotel, and Joe had to distribute money. We all got I think roughly the equivalent of twenty dollars in groups of two, ten dollars for each of us, which was more than enough at the festival. There was one problem: Mara was still missing. There had been a problem with her flight. Captain Dave had split from our group to go get her from the airport. This meant we were fifteen. Our number wasn't even without her, and there was an extra person. That extra person happened to be me. Mara would be my buddy when she arrived, but for the moment I was alone.

The festival was in a small square area between a few buildings. It was another space we easily dominated through sheer numbers, and we were all sitting together. It should've felt like being in an alley, the way the buildings came together, but the energy was more like a town square. There were temporary tables and little food stalls set up under tents. The tables were closer to the center of the space, with food stalls on either side. The air was delightfully weighed down by the smell of frying. For the moment I hung out with Tim, at first feeling a little like the kid at summer camp who sits with the counselors because they don't know how to make any friends their own age yet. I had been that kid before. Tim and I got talking, and I was reminded how far from being that kid I was now. After all, I was sitting with Tim because I thought I should wait for Mara to order food and that's what everyone else was doing, not because I was unwelcome. We talked about his cats waiting back in Boston, and how I had fallen in love with the stray dog who kept wandering over and begging for attention. If I were at a different point in my life, I would definitely have tried to bring it home.

Mara arrived with Captain Dave. I was given a heads up so I could go meet her with our money. I practically ran as soon as I caught sight of her, and the hug she gave me was bone-crushing. We'd never had an extra piece, but we were missing a piece, and it felt so good to be whole again. As we moved further into the festival, Mara was gradually mobbed by the rest of the crew before we joined Zoey and Jordan in line for food. I ordered crab on some sort of dumpling-ish thing. While the four of us were waiting for food, Jordan told us what he got so he could run to the bathroom and we could grab it for him if it came while he was gone. Unfortunately, as soon as Jordan left, the Man in the Yellow Shirt showed up.

I am not without sympathy for the Man in the Yellow Shirt. Something was clearly off about him. That sympathy didn't make me any less scared when he approached Zoey, Mara, and me the second Jordan was no longer with us. He started off getting in Zoey's space, and Mara and I closed ranks around her. Undeterred, he simply moved onto Mara, and when she made it clear that wasn't going to work out for him, he moved on to me. I looked over at our larger group, trying to catch someone's eye. I wasn't horribly afraid, per se. Mara could've knocked the Man in the Yellow Shirt on his ass with minimal effort. Still, I wanted the situation to end, and I wanted it to end without her having to do that. Given his suspiciously-timed appearance as soon as Jordan left, I thought I knew how to accomplish that and went to get Hunter.

Hunter was at most twenty feet away, having a drink with Harper for her very recent twenty-first birthday. I explained the situation and watched as his face hardened. Hunter stood and followed me, but as we walked back to Mara and Zoey, the Man in the Yellow Shirt passed

us. I pointed him out to Hunter, who came to stand with the three of us for a while anyway as a well-muscled deterrent to future misbehavior.

Mara got playfully offended about our arrival. “We don’t need Hunter!”

“I know,” I told her, “but I wanted him anyway.”

Hunter, for his part, pretended to be hurt, but he didn’t go back to Harper until he was reasonably certain we would be safe. He turned to me. “I’m glad you came and got me. Tell me if he bothers you again.”

The Man in the Yellow Shirt didn’t bother us again, but that wasn’t the end of his mild havoc. When he left us, he headed into the interior of the festival where the tables were. Once there, he tried approaching more of our crew. Zack took charge then, dancing with the man and distracting him. Eventually, a group of locals ejected him. I didn’t see The Man in the Yellow Shirt get kicked out, but the others filled me in later. After that, it was peaceful. He had been an unfortunate disturbance in a space that otherwise felt quite homey. The lights strung up around the festival gave a soft glow. There was laughter and dancing. I failed spectacularly at eating my crab, mutilating more of it than I got in my mouth in my attempts to break it out of its shell, but the conversation was pleasant and the dumpling-ish things filled me up well enough. It was a full, sleepy bus ride back to the resort.

Getting sleep on the bus was always a good idea, because rest was something we had a short supply of on Grenada. We only had two weeks there, after all, and our professors weren’t the type to waste a moment. It hadn’t even been a week when we were up bright and early again, piling into Osmani’s bus. We were told the day was going to be a “cultural tour”, though none of

us quite understood what that meant. Our first stop was a waterfall. I'm pretty sure it was Concord Falls, but Annandale Falls looks very similar. Whichever it was, the waterfall was up in the mountains, just off the road. A woman and a young boy ran a snack stall next to the side of the road. They also had a couple of monkeys, one of which stole some money from Joe and ate it, to our collective delight.

Of all the days we had been told we might want to have bathing suits with us, it was hilarious that this wasn't one of them. The waterfall almost looked like the stereotypical cartoon version of an oasis in the middle of a desert, with a waterfall spilling into a basin of crystal water that created the only break in the thick foliage. If it hadn't been in the middle of a lush, green mountain, I would've thought it was an oasis. It was a perfect swimming spot. Part of what made the waterfall a tourist attraction was the presence of divers who made their money by charging people to take pictures of them jumping from cliffs into the water below. They tried to entice our group with this, and weren't quite prepared for the response they got. Instead of pictures, Jordan wanted to know where to jump off. The most accessible option was a roughly fifteen-foot cliff. Without a second thought, Jordan stripped off his shirt and jumped.

Amelia was the one who wrote the *SEA Currents* post for that day. *SEA Currents* is the blog that the program runs while students are abroad. Because students don't have cell phones or internet once at sea, this blog is the primary way people back home keep track of their students. We took it over from C-282 when the ship came into Grenada. In her post about the day, Amelia said, "Our group is nothing if not impulsive and hive-minded—a potentially dangerous combination, but an invariably enjoyable one". I couldn't think of a way to say it better. Once

Jordan jumped in, it wasn't long before the rest of us divested ourselves of any excess clothing and followed. I have to admit, it took me a few tries to jump in. It feels silly that it did. This was not my first experience with leaping off a cliff into the water. My step-grandparents are seasonals at a campground in northern New Hampshire. Not far from that camp ground is a swimming spot called Sculpture Rocks. Icy water flows down from the snowy top of the mountain and carves into the rocks, making an incredibly deep basin below the cliffs. The jumping spot was, like the one in Grenada, about fifteen feet above the water. I walked up to the edge, stared down, and then backed off at least five times.

"Don't think about it so much," Dad advised. "No pressure, but if you don't jump I think you'll regret it."

Of course, Dad was right; to my utter dismay, he almost always is. If I hadn't jumped I would've regretted it. The same principle applied here. Besides, I have a tradition about bodies of water. The first time I traveled when I was thirteen, I ran headlong into the Pacific Ocean against the advice of the program counselors. When I was in Chicago, I got in Lake Michigan despite choppy water warnings, though my local friend informed me the water still wouldn't be nearly as choppy as I was used to in the Atlantic. When I was in Germany, I swam in the Baltic Sea and came out with what seemed to be a jellyfish sting. When I was in Scotland, I even got in Loch Ness, reinforcing the crazy American stereotype. If I'm in a new place, I get in a body of water. It's a personal rule. I was going to get in the Caribbean Sea, but that was a given, almost cheating in a way. After walking to and away from the ledge again and again, I jumped.

When I popped back up, it was to the thunderous applause of the rest of my crew. I felt warm, and it wasn't just from the tropical water. As harshly as I'd judged myself for not jumping right away, my crewmates were thrilled I'd jumped at all. I was too. Once I'd jumped once, I couldn't get enough, running back up the cliff and catapulting myself with hesitation, the same way it had happened at Sculpture Rocks. I don't know why. Something about that first jump always threatens to stop me. It feels sort of the same as the moment of hesitation I always feel in an airport. I never know how to start, but once I've started, I don't know how to stop. Hunter was living a very different life. He interrogated the divers and located an even more treacherous spot to jump from. Hunter made that jump once before Joe intervened and forbade it. We left not long after that. As we filed back into the bus, Captain Dave stopped me to tell me how proud he was of me for jumping. At the time, I didn't quite get it. Everyone else had jumped, and had a much easier time doing it than I did. In Captain Dave's view, that was exactly the point.

After that, we went to a spice plantation. Despite our earlier focus on cocoa, Grenada is actually known as the Spice Island. The spices had to be dried, then stored in these weird special drawers in the side of the buildings, because any rain would ruin them. I especially enjoyed the nutmeg. It was sort of maraca-esque. The spice plantation was a brief stop, though. We had yet to get to the crown jewel of our day, Grand Etang Lake and National Park. We were going to hike through a rainforest. I was ridiculously excited about that. One of my earliest school memories is doing a report in maybe the first or second grade on the Amazon Rainforest. I've wanted to see the Amazon ever since. The Grand Etang was not the Amazon, but that did not deter my excitement. Any rainforest was still a goddamn *rainforest.* After meeting the captive monkeys at the waterfall, we all held some level of hope about seeing free-range monkeys.

The hope for monkeys died relatively quickly. To be approached by wildlife, after all, one must be at least a little bit stealthy. We were the opposite of that. The earlier trail was not bad. It was mostly downhill and ended at Grand Etang Lake. This lake is a water supply for the island, and also extremely beautiful. Koi swam in the water, and matching calico cats yakked at us from the edge of the lake. I was a display of humanity at its best and least dignified, falling to my knees and making desperate pspsps noises for the barest scraps of affection. They were the only wildlife we encountered, and they hardly counted as wild.

After that, we really entered the forest. It was everything I ever imagined, vibrant colors among green leaves the size of my torso. It was also very, very, very muddy, which I supposed I should have seen coming. We did our best, for a while, to navigate this mud slowly and carefully. Those near the front tried to feel out more solid patches of soil, and those of us behind them learned from both their victories and their mistakes. Eventually, it became clear that navigating this forest carefully and quietly wasn't going to happen, and the victory conditions changed. We started tromping indiscriminately through the mud. Laughter rang through the trees, and we slowly became covered. By the end, I joked to Amelia that I looked like the creature from the black lagoon. At one point, I fell in knee-deep mud and lost my shoe. I shouted as I felt a sharp pain in the bottom of my foot, but managed to recover both it and my shoe. I insisted I was fine. When I swiped the mud away from the source of the pain, all I could see was still mud.

Joe was slightly less convinced than I was. He made me take a moment to sit and breath. My foot still didn't hurt that badly. I figured I would have a little bruise there in the morning, but nothing serious. I was wrong. I was too hopped up on adrenalin and endorphins to realize I had a

small gash in the bottom of my foot. It wasn't visible when I looked because it was packed with mud, and didn't make itself apparent until I was limping at dinner. Cleaning it out and treating it was a bitch that night, but for the moment it wasn't a problem. We had lost the rest of the group, but I couldn't mind too much as Joe had me help him look for tiny frogs that live in some of the cupped leaves we were passing. We didn't find any frogs, but I enjoyed the process nonetheless. Eventually, Joe told me to try to catch up with the rest of the group. I got further than Joe, but not as close as I would've liked to the rest of the crew, and for a while I felt lost alone in the middle of the forest.

Eventually, I caught up to at least part of the group. Jordan and Zoey had waited for me. Jordan intentionally covered himself in mud, and started a mud fight in a more open part of the path. One of my favorite pictures to have come out of SEA is one Tim took when the three of us finally caught up to everyone else. All three of us are covered in mud from our shenanigans. Jordan stands in the middle, arms around each of us shooting double thumbs up at the camera. Zoey and I are leaning into his sides. Zoey has an open-mouthed grin, and my head is thrown back with the force of my laughter. Captain Dave, much to my embarrassment, insisted on taking my backpack because he was worried about me falling behind. Maybe I shouldn't have brought it, but they had recommended that we carry things like bug spray and sun screen, so it felt a bit catch 22 to me. I joked self-consciously to Hunter, Ariel, and Amelia about getting left behind in the woods, and was told in no uncertain terms that would never happen. Victory conditions required that we all make it through everything we did together.

Chapter Eleven:
Saint George's

Tim got to lead a field trip. We were taking a historical tour of the island. For this tour, we didn't get Osmani, because the majority of the tour was done on foot. Instead we took two bus-like taxis to the port of the capital city of Grenada, Saint George's. The taxis dropped us off on the sidewalk next to the docks, and Tim let us take a moment to marvel at the clear water in the harbor and brightly-colored houses that surrounded the edges of it, the rowboat that sank not five feet from the shore and for some reason remained abandoned in the relatively shallow water, before he settled into lecturing.

As he was wont to do as a professor, Tim asked a question about the significance of cities being built along water ways. I always felt like I had an understanding with Tim as a student that stemmed from a similar place to the friendship we built up outside the classroom. His class probably interested my crewmates the least, and the same way he saved me from feeling lost and isolated at the beginning of Woods Hole, I felt compelled to save him from awkward silences

between him and his class. In response to his question, I said something generic about the importance of waterways for trade, and especially for fishing with an island nation specifically. That was enough to send Tim off on a tangent about the city and the decision to make Saint George's the capital that I'm ashamed to say I remember very little of. It's kind of hard to take thorough notes on a walking tour.

Tim led us around the edge of the harbor and stopped in front of a dilapidated building. He began to explain, very solemnly, that it had at one point been a library, but had fallen into disrepair, and under a colonial government, the books had been moved to Britain. This meant Grenadian scholars now had to go to England to find information on their own history. While Tim was explaining this, some Grenadians who appeared to be closer to our age than his stopped behind him and shook their heads, making cutting motions across their necks to indicate that this dude didn't know what he was talking about and we shouldn't listen to a damn word he said. It was a little bit funny, though I felt kind of bad for Tim. He had researched Grenada just for this class, had taken a leap out of his comfort zone of New England fisheries, and was trying very hard to give us a balanced and accurate picture of the island's history. In a paper Tim sent me the researcher, a Grenadian by the name of Merle Collins, mentions having to go to England to research the history of Grenada as well as other Caribbean islands, so I can certainly see where Tim's perspective came from.

Now that I'm faced with the job of explaining the complex history of Grenada, particularly as it relates to the American invasion, I understand his struggle. The responsible thing to do as a citizen of the imperial power seems to be to try to explain the conflict from the

Grenadian perspective, but there are multiple Grenadian perspectives. In his paper, Collins explains that at the time of the American invasion, Grenadian opinion was split. Some people thought the intervention was necessary, while others, including Collins, feared that the U.S. invasion would lead to another colonial relationship soon after their ties with Britain were finally severed.

On February 7th, 1974, Grenada became its own independent nation. The U.S. invaded on October 25th, 1983, only nine years later. The political history leading up to this moment was complex. Eric Gairy was the Prime Minister on the day Grenada gained its independence, but Maurice Bishop, his eventual successor, was at the head of the movement leading to Grenada's independence. The country was in the midst of great internal strife at the time because of a conflict where a demonstration was broken up by Gairy's secret police, known as the "Mongoose Gang". The protesters were largely high schoolers, who were on the frontlines of the independence movement. During the conflict leading up to Independence Day, Maurice Bishop's father, Rupert Bishop, died in this protest protecting students from the secret police.

Prime Minister Gairy had been in power for around 23 years when Grenada won its independence. He had been, when he began, a man of the people. In 1951, he was a champion of agricultural worker's rights. Opposition to him grew in the form of the Grenada National Party in the '50's and '60's in response to corruption in the form of rigged elections and secret police. This same corruption gave rise to opposition in the form of the New Jewel Movement, a lovechild of Bishop's Movement for Assemblies of the People (MAP) and Unison Whiteman's

Joint Endeavor for Welfare, Education and Liberation (JEWEL). In 1973-74, the movement became a legitimate party in opposition to Gairy.

Maurice Bishop was a charismatic leader. Tim explained to us how young Maurice Bishop had become the face of the revolution, favored by the people. Maurice Bishop was the Prime Minister when the New Jewel Movement came into power from 1979-1983. Bishop had been a popular figure for a long time. On November 18th, 1973, Bishop and five other members of the New Jewel Movement were beaten, arrested, and charged with possession of rifles and ammunition. This was a catalyst for the previously-mentioned demonstrations that Bishop's father died in. On March 13th, 1974, the New Jewel Movement attacked army and radio stations and called citizens to action to take police stations for them. The people complied, and the People's Revolutionary Government was created.

This government did a lot of good for the people. They worked to decolonize their educational system, supported local agriculture, created outreach organizations, held public budget discussions, and had adult education initiatives. However, the party also created a Leninist Vanguard, which created an image of "the chosen" that wasn't incredibly popular on a small island of 100,000 people. Internal party conflict between Coard and Bishop eventually lead to unease and conflict. As tensions rose, the party aligned itself with Coard, but the majority of the people, who hadn't been privy to internal party politics and saw Bishop as their duly elected Prime Minister, sided with Bishop. In 1983, Bishop and Coard agreed to joint leadership. While Bishop was away on a trip, however, rumors were spread that pushed him out of favor, and ended up with Bishop on house arrest. Bishop spread a rumor in turn that Coard wanted him

dead. A large enough potion of the people didn't think the party had any right to put their Prime Minister under house arrest to storm his house and break him out on October 19th, 1983. From there, they stormed Fort George. At Fort George, Bishop and several of his supporters were executed, ultimately sparking American involvement.

As he walked us to our next destination, Tim explained what a difficult topic the invasion and the events leading up to it still is for most Grenadians to talk about. People were hesitant generally, when he asked about it. He'd bought a few locals some beers and spent the better part of a night with them. The later it got, the more open they felt. It's a painful subject. The U.S. invasion was only 37 years ago. Most of the adults we spoke to had been alive during the invasion and could remember it, even if they weren't directly involved.

Our next destination was another fish market, so we went back into the realm of the scientific. This fish market was much different than the last. It was in a closed building, still by the sea. The stalls were a little more separated, and the individual sellers had more space to work. We talked to a fish seller who was completely prepared for our arrival. Rose, trying to get data for her project, asked about measures being taken for the invasive lionfish. According to the fish seller, lionfish aren't actually a huge problem for Grenada. He didn't think having people eat it was a good solution either way. Locals just don't tend to think it tastes very good, according to him.

As soon as we left the building, we saw a large billboard urging people to eat lionfish. I know serving it to tourists is considered to be more viable of a solution. It certainly came up on the menu at True Blue Bay. Still, the presence of this billboard was a reminder of how connected

science and politics really are. Tim said it was an example of how the government and the people don't always agree, and not just in Grenada. I wasn't too sure what to make of it myself, and I'm still not. I know lionfish have become a problem in tropical climates like the Florida Keys, but we only actually saw two lionfish while we were in the Caribbean, one floating dead on top of the water, and one live on a reef, and neither of those were off the coast of Grenada. Still, just because we didn't manage to find them doesn't mean there weren't any there.

We walked along the shore and were lucky enough to find a stall selling coconut water, the absolute manna of my existence on Grenada. Tim kindly offered to buy coconuts for the class. I accepted immediately. Joe - who had all the money for the trip from the program, and part of the budget included things like that - offered to pay, but I think Tim was very proud of this being *his* field trip and wanted this to be a treat from him to the class. It was, as all our days on Grenada were, a hot day, and we happily drank our coconuts as we walked to our next destination. Along the way, Joe picked us up bananas, too.

Our next destination was the Spice Market. Spices are one of Grenada's main exports, and it was apparent as we spent the day walking around the island. We had stopped briefly at a mall where cruise ships dock to use it as a bathroom stop, and there we met two separate women with stalls not ten feet away from each other both trying to sell us spices, both claiming to have the best. When we reached the Spice Market, Tim talked about it's historical importance and how during colonial times it would also be a slave market. I'm not sure how much information any of us retained about it. There was something uncomfortable about Tim loudly talking about the history of slavery and colonialism in this crowded public space. I'm not sure how much of the

discomfort was the feeling that it would be unpleasant for the people around us to hear, how much of it was the discomfort of the awareness that we were Americans standing in the middle of a busy place in Grenada talking about colonialism and slavery, and how much of it was because we were sort of blocking the sidewalk.

Eventually Tim released us to go explore the Spice Market. This was a more comfortable experience than the Fish Market, at least to me. It was a much larger space, and as we dispersed in groups it didn't feel like we were taking it over at all. There was still a level of security, though, in the knowledge that all sixteen of us were around there somewhere. Most of the traveling I had done up to this point, I had done alone. Not being alone, knowing fifteen people would have my back immediately, was a good feeling.

The Spice Market was the best opportunity we'd gotten to get souvenirs for people back home. Amelia and I went in together and found a woman selling a large assortment of spice baskets. "Tourists?" she asked. "Did you come in on the ship?" She was talking about one of the mega cruise ships.

"Scientists." Amelia and I explained what we were doing here, the purpose of our trip. It felt better to have a purpose, to not be "just tourists". We'd read so many articles in the lead up to going about the damaging affects of tourism, on the environment and on the people of an area. In a lot of ways, we learned, the relationships between countries like the U.S. and Grenada, when it comes to tourism, can mirror colonial relationships.

The woman running the spice stall humored us. I think she was genuinely supportive of our scientific endeavors, but at the end of the day we were also still tourists, even if we were

tourists with good intentions. Grenada isn't hostile toward tourists, though. They want people to come. About 56.6% of Grenada's GDP comes from tourism based on 2018 data. That's not necessarily a good or bad thing. Osmani expressed concern to us about young people putting too much energy into tourism, but that was also one man's opinion. A thread was pulled that day in my thoughts about tourism. A lot of reliance on tourism does come out of past colonial relationship, and citizens of colonial powers are not absolved of responsibility for that. That being said, if we all just stopped coming, that would do economic damage to places that rely on tourism, and at the end of the day citizens of these nations are making decisions about where to focus the energy and resources they do have. Something feels paternalistic about passing judgement on the tourism industry as a whole. Bottom line, it was a much more nuanced issue than I gave it credit for, and there's probably a balancing point of respectful tourism. My deepest hope is that our group, for the most part, struck that balance.

"You can go somewhere else if you want," the woman told us, probably to ease any suspicions we would feel about her next words, "but don't go to the woman three stalls down. She'll give you a bad deal. I'll give you a better deal here."

Amelia and I were fans of the little $15 spice baskets we were looking at. They were honey-colored wicker baskets with the name of the island painted on them, and little sea shells glued to the top. We didn't realize until later that the spices weren't labeled, but I wasn't too mad about it. The basket, after all, was a gift for Dad and Marie. The two of them love cooking, and I suspected they would enjoy the challenge of putting a name to the different spices. And hey, the basket was cute.

When our time was up, we congregated at the other end of the Spice Market. Then we walked uphill in direct sunlight. I missed the rainforest. The dampness combined with the constant shadows of the foliage had made it the most comfortable version of the local climate for me. In the direct sunlight of the street, I overheated and burned quickly. It was a relief when we reached the Grenada National Museum. We entered with high energy, at least in part from the relief of no longer being in the blazing sun. Hunter didn't have a water bottle and was stubborn about letting us share with him, which was super ironic in retrospect given how much he would eventually lecture me about drinking enough water on the ship. We dispersed across the first floor, which was full of interesting artifacts. They had a whole section on whaling; I excitedly pointed it out to Hunter, whose history paper back in Woods Hole had been about whaling.

As we moved upstairs, the energy shifted. The upper floor was dedicated to the revolution Tim had been teaching us about. The arrangement of the space felt more serious somehow than the space downstairs. I'm not sure how much of that feeling came from the museum itself, and how much came from Tim's lectures. Either way, our boisterous group got much quieter. We wandered from case to case, examining the items within and carefully reading the descriptions. It was history made tangible; artifacts frozen in a moment that still held so much weight for the people living on this island. The imbalance of this, that it could be something that affected Grenada so deeply, that the U.S. was involved in, that I never even heard of before this class always disturbed me. I think I've always had an idea, vaguely, of how far the reach of the U.S. stretches, farther than most citizens can keep up with. The concept is a lot less vague to me now.

I spent a long time in one room, starting at a banner on the wall. The background of the banner was white, made out of two long pieces of fabric. These pieces of fabric were pinned on the wall overlapping slightly, giving the illusion of unity. The top half of the banner had slogans from the revolution, such as, “BACKWARD NEVER” and “EDUCATION A Right not a Privilege”. It had a map of Grenada painted on the right side, and a portrait of Maurice Bishop labeled “RIP MAURICE BISHOP”. The bottom half of the banner simply read, “1979-1983 The Grenada Revolution”.

Fort George was our final destination. It was probably the worst part of our walk that day. We were hiking up a steep street in the blazing sun. I felt a little light-headed, though I never would’ve admitted it, and it was a relief when we reached the gates of Fort George. The ticket seller offered a tour, but Tim declined; he could give the tour himself. There was, again, a somber air as he led us through the halls and explained the revolution. Eventually, we came out to an open courtyard. This was the place Bishop was lined up against a wall with some of his supporters and executed. The executions began the conflict that led to the U.S. invasion. The U.S. claimed to be protecting students at St. George’s University, and American institution, but there was no significant evidence the students were in danger, or even involved. Seeing the bullet holes in the wall was chilling, but the surprising thing to see was the basketball hoop standing against the wall. I asked Tim if it had been there during the revolution, and he said no.

We climbed up the stairs to the walls of the fort. The view was beautiful, with the colorful houses and mountains of Grenada on one side and the rolling sea on the other. A lot of the top of the fort was green, taken over by foliage. We eventually congregated on the other side of the fort,

where a couple of buskers were playing string instruments. Some of us danced. Our group was never the type to miss an opportunity for a dance party. Others simply lounged in the grass and the sun and enjoyed the atmosphere. There was a slight feeling of dissonance, experiencing so much peace in a place I knew had been the center of so much strife, but Tim took it as an opportunity to explain what a living thing history is. The people of Grenada still made use of the space, and did so joyfully.

Chapter 12:
The First Reef

The *Corwith Cramer* getting to shore was kind of a big deal, even though there was still about a week before we went to sea. It meant a few things about our experience changed. Captain Dave was no longer with us as much as he used to be. As C-282's run came to an end, Captain Dave had to take over the ship from their captain. He still joined us for activities as much as he could, but he had to sleep on the ship. The first dinner at True Blue Bay without him was strange. It also meant we got access to a new resource in the form of the ship's lab. This meant we could do our first official reef survey, as opposed to the practice round we had done before.

Our first research site was off of Grenada, so we didn't have to go to sea to do our sampling. Instead, it was another field trip that represented the shift from island to ocean. The day before was mostly dedicated to breaking us up into the research teams. I was put into a team with Zack, Hunter, Lisa, Ariel, and Alice. These were our research teams for the remainder of the

trip. This split was the first taste of the aspect of going to sea that I was the most nervous about. The research teams didn't matter that much, in theory. They dictated who was in the water at what time for survey days, but there wasn't a huge window for socialization between the speedy science we had to complete and the fact that we had breathing tubes in our mouths. What I was really afraid of was watches. Eventually we would be split into three watches: A-Watch, B-Watch, and C-Watch. Our watch schedule determined our sleep schedule. While I was reassured that, on a small ship like the *Cramer*, we would still see each other, we would see people outside our watch less. It wasn't worth worrying about, because it couldn't be changed, but I worried anyway. I wasn't even sure who I wanted on my watch, because I wanted pretty much everyone on my watch. I worried that being split into watches would finally do what I feared going home between Woods Hole and Grenada would do and break us up.

We spent the day before the dive doing mock timed practices on the lawn. As we had in the pool back in Woods Hole, we coordinated the teams going through in order, first Substrate Team, then Invertebrate Team, then Fish Team. This order was partially to accommodate us and partially to accommodate the sea life. The substrate team laid the transects, so they had to go first for the rest of us to know where we were working. Laying the transects and the quadrants tended to disturb the fish, but not the invertebrates as much, so the Invertebrate Team went through to give the fish time to calm down. The Fish Team went over the transect last, once the wildlife had a chance to settle. On the lawn, where only the Substrate Team could practice with their equipment (and even for them, everything would be different maneuvering in the water) we just ran around ineffectually when Joe told us to. It was a little bit ridiculous, and I'm not sure how much it actually helped, but it was fun.

The most useful thing it did was give us a chance to decide who was doing what. We were still frantically studying flash cards of fish and invertebrates to be able to identify them in real time. Our groups split up the tasks by who felt they had memorized more of what. Zack was my dive partner, which basically means he was my buddy for the buddy system. We were on invertebrates for the first dive. Zack and I made sure we had the invertebrate cards to study, and we dispersed for the day, which meant we put away our school work and had pool parties more often than not. In the face of the impending dive, we were feeling a little more studious than usual.

The following day, a couple of vans took us to docks to meet the motorized tourist boat that would bring us to our Grenada reef site. For a moment, I felt dubious about all of us fitting aboard the smallish boat, but we did with ease. I was so excited to survey a reef, even though I was still nervous. I had gotten to a point where I could dive back in Woods Hole, but a pool was very different from the ocean. I worried the difference would do me in a little. We left for our sampling site from the same place the *Cramer* was docked. She might have gone a long way to making the motor boat look small. I don't think anything could've compared to her in our eyes; a mega cruise ship could've docked right next to her and it still would've looked small.

The ride on the little reef tourism boat was fun. It bounced across the waves, sending sea spray up at us. We got as close to the water as we could without getting in it; some of us sat out on the bow. Our laughter and banter seemed louder than the engines. The excitement only mounted further when the ship came to a stop at our dive site. Joe did his best to corral us all, setting boundaries for our swimming and reminding us of safety procedures. Experienced divers

like Hunter and Ariel helped a bit, giving us tips on how best to jump into the water from the boat without flooding our masks. I sat on the edge of the ship, staring down at the crystal blue water. My fins, a long-beloved color scheme of purple and grey, skimmed the water below me. As Hunter had instructed, I put my hands on the edges of my mask and pressed down, making sure it would stay sealed to my face. I pushed off the edge of the boat with my butt and splashed into the water, resisting the instinct to close my eyes. It would be silly to do while wearing a mask, and I would've missed the flurry of bubbles that rose around me as the water and I collided.

Zack followed soon after. Before we had to do the survey, we were given about fifteen minutes to explore the reef. Ostensibly, the purpose of this time was for the two larger research teams to decide where we wanted to lay our transects and sample from. For a lot of us, myself included, this was our first experience with a reef. Rather than properly scout for sampling locations, we got caught up in the wonder. I had a cheap waterproof camera that I took with us in the hopes of getting some non-research photos, and was glad of it. We were lucky enough to see a little octopus on our first dive. Dad loves octopuses; he has a big tattoo of one on his right bicep. I was glad to get a picture of the octopus to take home for him.

The biggest point of wonder, for me at least, was the Reef Crackle. We had learned about the Reef Crackle, even heard recordings of it in class. The Reef Crackle is a sound that a healthy reef makes. It makes this sound because a healthy and productive reef has tiny snapping shrimps. These shrimps create a bunch of little bubbles that pop loudly, making a crackling sound. Other things, like the munching of parrot fish on some tasty coral, contribute to the overall symphony

as well, but the snapping shrimp are the main source. Have you ever had a fresh, still-warm loaf of homemade bread? The Reef Crackle sounds a lot like cutting the first piece off and just sort of crunching it in your hands a little. It's a homey background roar in your ears.

Eventually, Joe corralled us all into actually doing our work. Our larger team, because we didn't know when to quit, laid our transect at the deepest point possible, which would've been somewhere between 20-24ft below the surface. Free diving, this was a questionable life choice, but one we made with confidence and enthusiasm. I think Hunter being one of the people to lay the transect added to this unwarranted confidence, but we didn't think about how much other teams would also need to interact with the transect. In our role as the Invertebrate Team, Zack and I had to be able to dive low enough to look underneath and around rocks and coral for friendly little critters like sea urchins and slugs, maybe an octopus or a lobster if we were particularly lucky.

Surprisingly, I was up to the task. With SEA's official camera, Zack and I took turns diving down to get photos as we catalogued and identified. I got good at diving fast, taking a picture, and coming back up. The trick seemed to be using most of my air on the way down. Equalizing was a familiar enough feeling now to do it quickly, barely a pause before my legs were kicking again. I felt far more balanced in the water than I ever had on land. Twisting my body, getting it to stay half-curled and upside-down to frame the perfect shot of whatever reclusive creature was hiding under a crag of rock or coral, was easy, almost effortless. Tim praised me later that night over dinner. He knew I'd had a difficult time learning to dive, but he

said it seemed like I belonged in the water, like a mermaid. Hunter was kind enough to agree with him.

When the survey was done, we got to have a fun diving field trip. One of Grenada's main tourist attractions is the Molinere Underwater Sculpture Park. Joe had pointed it out on the way to our sampling site, and promised we would stop for a visit if we had enough time after we were done sampling. Again, we launched ourselves off the side of the boats in a flurry of bubbles. The first set of statues we saw, following underwater tour guides, was a ring of people all standing together. I got sidetracked there, because I saw a Moray Eeel. He was an olive green color, and his eyes sparked at me as he hovered ominously from his hiding place under one of the sculptures. I gave him a respectful amount of distance, aware of the rows of very sharp teeth in his mouth and his territorial nature, but I was very glad to see him and watched him long enough that Joe had to urge me into catching up with the group. We always seemed to see the coolest creatures when we weren't actually counting. During debrief that night, we talked about ways to account for these extra things we saw in our data.

My favorite sculpture was of a man writing at a typewriter on a large desk. The idea of it spoke to me. I would give up the technology of my digital document for a typewriter any day if it came with the magical ability to write at the bottom of the ocean. I'm imagining myself there now, under the warm water, soft blue light filtering in from the harsh sun above the waves. I think there would be a focus down there I can never find ashore. The calm timelessness of the weightless blue world would make all other concerns fall away. Every once in a while, when I needed a break, a school of brightly-colored fish would swim by to serve as an inspiring

distraction. As I write this, I want to say this underwater adventure was my favorite field trip, but I've wanted to say that about every trip we took in the act of remembering.

I think it was our last field trip on Grenada, though. That evening, as we got back to shore, some of my crewmates volunteered to go to the *Cramer*'s lab to process our water samples. I did not. As rabid as I was for anything that had to do with the ship, I remembered the quick fall from grace that came with my very wrong belief that I could just do science right away. In short, I was a coward and left that for another day. Instead, I went back to the resort to enter data with Lisa. Other than that it was just squaring away last details for classes, like finishing *Far Tortuga* by Peter Matheson, a novel about the era of turtling that Tim had assigned us. I hated it. There wasn't a single character I didn't hate, and it was almost impossible to tell who the characters were anyway because dialogue was almost never attributed. I wanted to say something nice about it because I felt bad for hating something Tim was so excited about. My dislike of the novel felt like a betrayal of the unspoken pact we had as token humanities people.

After our professors wrapped up our classes, we had a couple days to just enjoy ourselves on shore. One of the days, we organized a field trip ourselves to a local beach. Most of us came, though a few (smart) individuals stayed behind at the resort to get at least a little rest before we finally made the move to the ship. We had a decently long walk to the local university to catch a bus we had student passes for. About half way through the walk was a food-court-esque place called the Container Park that was popular with local students. It was a few different eateries, all out of shipping container structures. I got a crepe and a smoothie from two separate stalls. After that, we made our way to the beach. Zack and I did some snorkeling. Ariel carried a bolder

underwater so she could run along the sea floor. Jordan, Rose, Zoey, and I made the dubious decision of holding sock wrestling matches in the shallow surf. It was a day full of laughter.

The next day, Jordan took me sailing. The resort had little catamaran boats that could (sort of) be rented out. It used to be that anyone could rent one. That policy had changed, and the standing policy is now that guests can only take the catamaran boats out with a licensed instructor from the resort. This policy came about because a very confident father decided to take his family out for a day of sailing and promptly got them all lost at sea. Everyone was rescued in relatively short order, but the family had an unpleasant night. Russ, the resort's owner, told us this story as he gave Jordan permission to take us out. Jordan assured Russ, who was familiar with our program, that he had prior catamaran experience. This was very true; Jordan has at points taught at a high school level sailing camp. It would not be true of everyone in our program, but I think Russ trusted that the college kids with the sailing program knew how to sail.

Jordan took me and Alice out sailing first. I got up earlier, and so did Hunter, so we'd had a round out with a resort worker. Sailing with Jordan was much more fun. I was impressed with how quickly he could get the catamaran to turn on a dime. More than once I started worrying about how close we were getting to the boundaries Russ had set for us based on the past unfortunate incident, but every time Jordan turned us around quicker than I thought ought to be possible. After a little while of this, Jordan taught me how to steer the ship. He explained how turning the rudder one way made it move in the opposite direction, and how you had to feel the resistance of the waves. There was another more complicated bit with how to work the sail, but I

didn't quite absorb that. Jordan just worked the line and compensated for my mistakes. It was my first ever experience with sailing.

The following morning, we gathered at the Dodgy Dock one last time with all of our luggage. As soon as our professors had everything ready and our ride arrived, we would head to the *Cramer* and become her crew. While we waited, I felt a growing sense of unease. I tried to take in as much of the people around me as possible, because I didn't know who would be on my watch and who wouldn't be. Then I realized how ridiculous that was. None of us were going anywhere, at least not without the others, and even if we did, so what? We were a family, and my mantra to myself became "A family, once found, is never lost."

Part Three: The Sea

Finally to sea

Why we all came together

Following a star

Chapter 13:
Toward the Horizon

I must admit to you now, my friends, a deep shame. I passed knotting class by the skin of my teeth.

This is perhaps an exaggeration, in that we didn't have a knotting class by itself. Knotting was part of Leadership in a Dynamic Environment. It was a part I expected to be good at, because I'm usually relatively good at hands-on things. I struggled to develop the muscle memory, though. Part of this was the way the class was taught. In another bid to foster community between the student sailors, the knotting portion of the class was largely taught to students by students. Captain Dave would demonstrate the knot once or twice, then a few students would get it and he would expect them to disseminate the knowledge. Some of our crewmates already knew some of the knots. Jordan, I think, knew them all.

The problem was that there were several ways to tie each type of knot, and a lot of people who came in with prior knowledge knew some of these alternative methods. I learned to tie a figure eight knot three different ways from Captain Dave, Hunter, and Eliza. For me, this meant getting confused and ending up with a mess instead of a knot. There were five knots we were meant to learn: bowline, figure eight, square knot (aka reef knot), and round-turn and two half-hitches. These are some of the most basic sailing knots that someone would typically learn on their way to being a deck hand, which was the role we would be fulfilling once we were at sea.

Captain Dave told us we were going to have to tie a knot as a test to get on the ship. I was nervous, because I only got my knots to be actual knots about half the time. We left True Blue Bay in taxis. The entire staff came out to wave goodbye. For the taxi ride to the docks, I managed to forget about the impending test and reflect on my time on the island and the people around me. I certainly had a nostalgia for the island, though not as great as the one I'd had for Woods Hole. Nostalgia was quickly replaced by thrill when the *SSV Corwith Cramer* came into view.

We lined up along the dock with our bags. The ship was so close, and I was reminded unpleasantly of the test that awaited me. I felt like I was marching to my doom as we shuffled up the dock by the ship with our bags. Once my bag was handed up, with a little help from Hunter, I had to join the small cluster of students being tested on knots. Violet, one of our deck hands, handed me a piece of line and cheerily asked me to tie a figure eight knot. A figure eight knot is a type of stopper knot, which means it is a knot you tie at the end of a line so that line won't get pulled out of wherever you've put it. For the record, not once in the course of our voyage did I

actually have to tie this knot. To tie this knot, you make a loop with the bitter end (which is just the end that is not attached to the boat) of the line. Then, you go behind that loop and pull the end up through, making… nothing. The line falls apart. You make a loop, go behind, and get… a pretzel?

Violet was watching me cheerfully. I waited for her to get less cheery as I made folly after folly. "Oh my god. I promise I know how to do this."

I did know how to do this. Loop. Behind. Pull. Shit. I was going to get left behind on Grenada. That would be a fun call home. *Hey Dad. Know how I was supposed to go to sea? I'm not, because I could not tie a damn knot… Yeah, no, I'm standing on the dock watching the ship sail away… No, I don't have a place to stay… Yeah, I needed a flight booked like a month ago, I know… Yes, I do realize how screwed I am, thank you for asking.*

"Let me see?" Violet offered, holding her hand out for the line. "I'll show you."

Then this woman performed a magic trick, I swear to you. She made a loop. And this, this was the crucial bit, she made a loop where the bitter end went in FRONT of the line. After that it went behind. This created the eight shape. Violet then pulled the bitter end of the line through the top part of the eight, so the line crossed over the bottom of the upper circle and pulled tight. The little eight stayed perfectly where it was supposed to be, neither unravelling not creating a vexing pretzel. Violet handed me the line, and I copied her movements as if I was defusing a bomb. My little eight formed, and stayed. It was a stopper knot that could actually stop something.

Violet smiled at me. "Welcome aboard!"

I felt lighter than I had in a long time as I climbed up the side of the ship. Our bags had been put below. We were all gathered onto the quarter deck to be welcomed aboard and, finally, split into watches. I found myself on C-Watch. C-Watch was under the direction of Third Mate Ricky. Our scientist was MJ, and our deck hand was Pete. The students, other than me, were Hunter, Mara, Zoey, and Ryleigh. A guy named Cody was also listed with the students, though none of us knew any Cody. Cody, it turned out, was one of the volunteers with the Waitt Institute. We knew these volunteers would be joining us, but we'd been picturing professorial-types. Cody and his counterpart on B-Watch, Kaleb, were among the youngest on the ship, at 18 and 19 years old.

We had our first ship meal that night, prepared by our wonderful steward, Jen. She was honestly one of my favorite people on the ship, and not just because she made us way better food than I'd dared to dream we would have access to. Jen was also a writer, and she talked openly with us about the experiences that had led her to this point in her life. In addition to being a steward, she also had a captain's license. Throughout our time on the ship, she gave special lessons on things like bread making and flavor profiles. Jen was a singular part of my experience on the ship.

Eating on a ship is interesting, because the tables are gimbaled. What that means, basically, is that the table moves on a balance point so that it remains level even as the ship moves. It looks weird. Often, it looks like the food really ought to be sliding off the table, but it's your perspective that's tilted. Violet explained to us that tables on ships didn't used to be gimbaled. Sailors would hold their plates with their elbows to keep them in place. That's why

your mom probably didn't want you to put your elbows on the table; you weren't supposed to look like an uncouth sailor. Nowadays, sailors are the least likely people to put their elbows on the table. No one wants to be responsible for unbalancing it and dropping dinner in everyone's laps.

We didn't have much to do after the general welcome and ship's orientation. They just wanted to let us get used to the fact that we were on the ship now. I don't think our tight-knit group was totally prepared to take in Cody and Kaleb. This was not a factor of unkindness; they had just been very unexpected, and the sixteen of us had spent a long time getting used to being in each other's space constantly. As the night started to fade in and we milled about, I noticed that Cody and Kaleb were sitting off by themselves. I supposed, since they both came from the Waitt Institute and the same very small island, that they had probably known each other for a very long time. That would probably work out for them under different circumstances, but they'd been split into different watches. I decided to go sit with them. We talked for a little while, not about anything super consequential.

In deference to the big day I knew we had ahead of us, I packed myself in for an early night. There wasn't exactly a concept of crew quarters on the ship. There was a Captain's Cabin at the back, right below the quarterdeck (a slightly raised deck that has the wheel of the ship on it), shared between Captain Dave and Joe. The scientists and mates had weird mini cabin things tucked at various points around the ship. I never saw the inside of one, so I'm not sure what they looked like. The rest of us just lived in the body of the ship. The walls of the ship were lined with roughly six by four by five-foot holes. These were our bunks. We had to fit inside of them with

our bags. Most of them had a little shelf. I shoved my bag underneath the shelf as best I could, made my bed, and got in.

My bunk assignment was… not inspiring. It was in a tiny alcove actually dedicated to bunks, unlike most which lined hallways and the galley. The alcove was marked with a little plaque that read, “SQUALOR”. I learned it was called squalor because, for some reason, the back of the ship is always the hottest part. Ariel, Zoey, Eliza and I, Team Squalor, had to be prepared to sweat. The first time I got in my bunk, I immediately thought of a coffin. It was so hot and dark. My pajamas stuck unpleasantly to every inch of me. Every time I thought I was finally going to fall asleep, the ship moved enough to sort of thunk me into the side of it, or make me think I was going to fall out. At some point, I heard a horrible screeching and peeked out of my bunk. It was the sound made by the door to the engine room.

It wasn’t an amazing night’s sleep, but that didn’t really matter. The excitement was enough to make me feel awake when morning came. An interesting fact about ships that I almost forgot to mention: there are no alarms on ships, or at least not on the type we were sailing. It makes sense, when you think about it. If everyone’s sleeping on top of each other, and not everyone is on the same watch, no one would get any sleep with people’s watches and phones beeping constantly. Instead of alarms, it’s the job of someone from the previous watch to wake up the next watch. The first morning, that meant the professional crew and professors waking up all of the students.

Most of the morning was spent on safety drills. We sort of had to be prepared to be firefighters. In the middle of the ocean, there’s no 911 number to call. For every emergency drill,

a professional crew member took the most dangerous part. Each watch was assigned a disaster response. In case of a fire, C-Watch was responsible for blocking off the vents with little circular covers we were supposed to slam over the hole to try to suffocate the flames. The vents are those tuba-looking things you see attached to various parts of ships. They're designed to let air flow in and keep sea spray out. On each watch, a side job was to do our best to keep them turned toward the wind so our crewmates sleeping down below wouldn't boil to death. We also had drills about what to do in case we had to abandon ship. These were mostly about who was to grab what supplies and who was expected to be in which of our three life rafts.

In order to properly understand the next, and most intimidating, drill, we'll need to go over some basic ship's anatomy. The very front of the ship is called the bow. The back is called the stern. The quarterdeck is the furthest aft, or back. The foredeck is the furthest *forward* deck, at the bow of the ship. The midship is between those two decks. It's the largest deck of the ship. (Larger ships than the *Corwith Cramer* would have more decks.) Additionally, you'll want to know port and starboard - respectively, left and right in relation to the bow of the ship. If you're anything like me, you might be thinking something along the lines of, *Hey, it's cool to understand that, but why don't we just say left and right like goddamned people?* According to the mates, port and starboard are used because they are always in relation to the ship itself, and left and right could be confused to mean relative to something else, like an island or another ship.

For all the drills, we were organized by parts of the ship. A-Watch met at the bow, B-Watch met at midship, and C-Watch met on the quarterdeck. I'll always wonder exactly how Captain Dave and Joe decided who was on which watch. I know in part it's usually about

balancing personalities, but they regularly made comments about how amazingly well our whole crew got along. I wonder now how much of the organization might have had to do with who they wanted where in case of an emergency.

The Man Overboard Drill is the one that's stuck most in my memory. I don't remember anymore what supplies I was supposed to get if we had to abandon ship, or where exactly to find the covers for the vents, but I remember every detail of Man Overboard. The absolute most important thing in a Man Overboard is to keep track of where the person is in the water. The first job of anyone on the ship is to point at the person who's fallen overboard if you're the one who saw them go over, or first spotted them in the water. You point at the person by holding your hand out, palm vertical. I'm not quite sure how, but it ends up slightly more precise that way. Once one of the designated spotters relieves you, you go to your regular station. A-Watch was responsible for deploying the small boat to rescue whoever had fallen overboard, if conditions allowed. If conditions didn't allow, First Mate Danno was our emergency swimmer. He would be responsible for jumping into rolling waves to rescue whoever went over. B-Watch, with the help of Tim who was our regular bow-stationed lookout for emergencies, kept the ship sailing. C-Watch, my watch, were the emergency spotters.

Zoey and I both had special jobs aside from spotting. Zoey was our Emergency Helmsperson. Any time there was an emergency of any sort, she would take the helm and steer us through it. I didn't envy her. Then I got my own job. Using the ship's steering compass, the big one mounted in front of the wheel, my job was to take bearings on the person in the water. I would look at the "person" in the water (for training purposes we threw a life-vest overboard)

and try to line them up with a number on the compass. Captain Dave would yell out for a bearing, and I would yell back something like seventy-five degrees, and Zoey would steer in that direction. If no one was seeing our missing crew member anymore, I would be giving their last known location. If I was wrong, we were more likely to sail away from them than to save them. I had never taken a bearing in my life before that morning.

That was why we were practicing, though. I don't think Zoey had ever steered a tall ship before that day, either. Someone, I think Ricky, stood with me while I took practice bearings first on the moving life vest, then just on random things in the area to get a wider range of practice. By the end of the drill, I was within a degree of what he thought the answer should be every time. Luckily, all the drills stayed drills. Our crew never suffered any major disasters. There were no fires and no chemical spills in the lab. No one ever fell overboard, and we were not the first *Cramer* crew to have to abandon ship.

Once we were through with our drills, we started getting ready to head out to sea. The night before, we had been assigned harnesses. They were brightly-colored straps the thickness of seatbelts, and they went around the upper torso. These vests could be used to strap onto the ship under various conditions and circumstances, and also had little lights that would turn on to make us visible in the water at night. I never had much faith in that, because the lights were small and the information packets basically told us that if we fell overboard at night we would be lost. Usually, if you were standing watch you were required to wear your harness. For leaving port this first time, only C-Watch had to get our harnesses, as we would be taking over for our first real watch as soon as the all hands part of the morning was over with. Leaving port for the first

time was an all hands activity. All hands weren't technically necessary, but Captain Dave wanted to let us all be a part of it.

Sailing is a learn by doing sort of project, so we went to see various mates to get instructions for the little bits of the sail we would be responsible for. My job was to help manage some sails toward the front of midship. I was working with Hunter and Cody. I believe it would've been the square sails we were hauling into place, but honestly, I'm not sure. That's about how well I understood what I was doing, which was funny, because I managed to accidentally trick Cody into thinking I was a professional sailor. All I had done was paid attention when Jailbreak explained our jobs to us. I didn't need to understand what all the lines did on all the parts of the ship and how these moving pieces fit together. I just knew that we had to haul specific lines and tie them down to the specific pins. Cody was baffled by this job, so I asked Hunter to handle one set of lines while Cody and I worked on the other together. Hunter knew what he was doing and had the strength to haul the lines alone. I knew what I was doing, but Cody was useful for some extra muscle.

"You're a professional," Cody told me without a doubt as I re-explained how to wrap the line on the peg.

"Nope," I answered.

"You're messing with me," he said. "You've got a compass tattoo and everything!"

"This is the first time I've been on a ship like this," I insisted. I finished tying off the line. "I just listen well and learn quickly.

Apparently, that was some kind of witchcraft.

We were just about ready to sail out. The last thing we needed to do was haul the main, which, as the name implies, is the largest sail on the ship. This sail actually takes more than a watch's worth of people to haul, which is why you get phrases like "on deck, on duty". For the first time, every student that could fit was on the line and we had it up in no time flat. Going full sail probably wasn't strictly necessary; I think we took down more than a few sails during our first hour of watch alone, but Captain Dave was feeding the hype. Once the sails were up, all the pressure was on Zoey. She had the difficult job, under the close direction of Captain Dave, of steering the ship out of port. I think they wanted her comfortable with maneuvering in case she ever did have to steer us through a crisis. Once we were out of port, Captain Dave handed the watch over to Ricky, and C-Watch settled into our first true ship's watch. Grenada was behind us, and there was nothing left but us, the open sea, and the horizon.

Right now it's within the first 48 hours of our voyage. I am sitting out on the bowsprit enjoying the breeze and the gentle roll of the ocean. I have to admit that the hammock is not as comfortable as I had imagined, but that fact is more than outweighed by the majesty of the moment. I am on the bowsprit of a tall ship crossing the ocean, and I've been more than a little involved in sailing her. Grenada is behind me. The open ocean is in front of me. I don't know that I've ever felt more at peace.

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Sometimes out here I could swear I hear someone speaking to me or calling my name. It's thrilling in a good way. I like the air of mysticism and legend, and how much more possible that all feels out here.

***

That first night, my cramped and overheated bunk felt a little like a floating coffin. Now I'm sitting in here writing and it almost feels cozy, if still a little too hot for my tastes. Though I have to wonder how I'll do with winter when I get home to New England.

I've done a lot lately that I never would've thought I could do. I'm an excellent lookout. I can spot a ship ten miles off in the dead of night. I detected a squall in the dark. I have the makings of a decent helmswoman as well. I kept us on course through a squall my second time at the helm.

Still, some things are harder to adjust to. "Sorry" is probably the word I've said the most to my mate. I miss all my friends being together. Maybe more than that, I miss the spaces to be alone with each other. I feel like I miss everyone, even the people on my watch.

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I need to find a way back to this somehow. I love this so much. I love a home that moves. Right now I'm sitting on the quarterdeck at anchor with a bunch of people while Ariel plays guitar. With my crew around, the *Cramer* really does feel like home.

***

We had our first Swim Call today! I struggled with jumping off the bowsprit, but all my friends cheered me on and eventually I managed to throw myself in. It was a lot of fun.

I saw my first Green Flash today! I thought it would be like in *Pirates of the* Caribbean, but it was very subtle. The moment before the sun disappears below the horizon, it turns green. Directly on its heels, I had a good conversation with Tim about life and the universe. I also taught Cody to tie a bowline, which is really cool considering I still struggled with that one when I got here. Hunter taught me how to tie a stopper knot for the mainsail.

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We saw dolphins off the starboard bow! They jumped and dove. It almost seemed like they were playing with the ship.

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Mara and I had lab together. I messed up the water sampling, which I felt really bad about. Mara helped me redo it and talked me through it, and I felt a lot better by the end. When she was through with me, I was a water sample processing master!

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Hunter and I had lab together today. It was really exciting and fun! We processed a lot of sediment samples, which is something Hunter had some experience in and I had none. He's a really great lab partner. Even though he knows a lot more about this than me and is constantly teaching me things, he insists that I make some of the calls about what we're doing. It makes me nervous, but it's something I value more than I can really say. His confidence in me gives me confidence.

The Neuston Tow, the net we throw off the side of the ship to collect zooplankton samples, came in really alive! We got several crabs and some spiny lobster and a jelly and a pike fish, among a bunch of other cool stuff! Hunter was very excited about catching shrimp with his bare hands. Unfortunately, one of the shrimp returned to favor. I passed the tweezers to John, our scientist on duty, and let him pull it out. As much as I wanted to help, I'm wasn't confident enough in my footing on board to have done it. I don't walk around the *Cramer* so much as I fall with style.

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Butterflies are larval mermaids.

Chapter Fourteen:
The Trip of Goodbyes

Before anything else, I have to admit that I've stolen a phrase. Our steward, Jen, is also a writer, and a pretty good one at that. She coined the phrase "trip of goodbyes" in a poem she wrote about our trip, which had an unprecedented rate of people coming and going off the ship. The domino effect of goodbyes began with a hello when we reached Montserrat. We spent a significant amount of time on that island, second only to Grenada. There were a number of reasons for this, including it being the island that Cody and Kaleb were from, but I think the main reason was Soufrière Hills. Soufrière Hills is a very significant active volcano. (Ariel did her history paper on volcanoes in the Lesser Antilles, and this particular volcano featured significantly.) The volcano erupted in 1995, three years before I was born, the year my brother was born, actually. This massive eruption drove people from their homes and destroyed about half the island. The volcano is still active and closely monitored; roughly half the island remains an exclusion zone that you can only enter with certain permits, making the already very small

island even smaller. As a group of visiting scientists/science students, we could look forward to a tour both of the exclusion zone and the observatory from which the scientists monitored it.

Arriving at the island was an experience in itself. Captain Dave had us circumnavigate the island. For a while, we stood at the edge of the ship, watching. Monserrat was smaller than Grenada. We saw a few scattered buildings as we sailed around, but the volcano outshined everything else. Covered in greenery, it could've been a normal mountain, if not for the light smell of sulfur in the air. Ricky gave us permission to sit on the housetop so we could to get a better view. The professional crew quietly took over the watch so the students could ogle the volcano. As we sailed around the side of the island that had become the exclusion zone, I was the closest to any volcano, let alone an *active* volcano, that I had been in my life. I think that was true for a lot of us.

Mike joined the ship when we reached Montserrat. I had mixed feelings about that. I love Mike. He's a good professor and a good human being. Problem was, there's only so much space on a ship, and Mike's arrival was the harbinger of Tim's departure. At the next island, Tim would leave after spending a few days basically sleeping in a weird closet. We were going to be docked at Montserrat for a while, though, almost a week, and I tried to focus on that. Mike and Tim were friends, after all. We were going to have a rather enjoyable sliver of time with both of them on the ship. Once Mike was actually aboard, most of my mixed feelings went away. It was nice to have him back.

Being on land again was nice too, sort of. At first it was weird, just physically. We had to adjusted to the constant "motion of the ocean", as Captain Dave liked to say, and it seemed, once

we were on solid ground again, that in the process of gaining our sea legs some of us had misplaced our land legs. Steady ground felt strangely *un*steady. By this point, we had adjusted well to life on the ship. There was a certain sense of home that came with thoughts about Mama *Cramer*. We'd found the little moments that seemed to be missing at first in meetings out on the bowsprit (Mike's preferred place to hold "office hours" with some illusion of privacy) and the afternoon watch. The afternoon watch was when we gathered on the quarterdeck for classes, and after that it meant we were all awake. Some of us were still on watch at the time, but being on watch meant constant alertness and availability, not necessarily constant work, and we tended to gather together on slightly lazier afternoons.

Still, being on land together was a different experience, all in one place with no responsibilities aside from being present and at least pretending to listen to whatever was being lectured about. Part of the tour was general touristy stuff. Montserrat was the only place we truly experienced shore leave. Later, while docked off of Barbuda, we would get a sort-of shore leave, but that was a very contained sandy beach. We would receive a kind of shore leave at Antigua too, but that was one afternoon after Tim's final field trip, another very contained event. On Montserrat, we had options.

Cody was our key to Montserrat. He treated C-Watch, minus Ryleigh and plus Zack, to his personal tour of the island. Over the series of a few days, Cody took us to most of his favorite places. We spent a little bit of time at the restaurant/bar right near the docks meant for tourists, but Cody was determined that the people who were his friends would see more than what tourists usually saw of his island. He got a friend of his to pick us up and take us further into the island.

We met his mother, who bombarded him with affection and undermined the bad-boy image he had been trying to portray, though I'm not sure how many of us really bought that image in the first place. We went on the roof of his house and looked over the island. On our way off the roof, I scraped my right shin over a long rusty spike sticking out of the top of it. The wound was minor, but became something I had to keep an eye on; it didn't completely heal until after the trip was over, the constant heat and moisture of being at sea not really helping the process. After that, he bullied his favorite bakery into opening for us. I felt a little weird about that one, and the sentiment seemed to be shared by most of our companions, but clearly it was important to him and the pie that resulted was very good. He also took us just a little way away from the tourist bar to a pop-up shack that he swore up and down had the best chicken we would ever taste. What we were presented with was some damn good chicken, and Zack got into a pretty epic dance competition with some of the locals. I don't understand such things well enough to know if Zack won or not, but based on the reactions of the people he was dancing with and those around us, he certainly held his own. Bopping around the island with Cody felt a lot less like being tourists and a lot more like visiting a friend at their home.

In order to see the observation center and the exclusion zone, we all piled into busses once again. There was a certain amount of nostalgia for Grenada in that, I think. After Cody's personal tour, it was slightly less interesting. The volcano observatory, after all the buildup, managed to be somewhat underwhelming. We had been given the impression that we were going to be spoken to by the actual scientists running the observatory about what that job was like. Instead, we were shuffled into a room and shown a video. After that, the woman who had sent us into the room brought us back out and explained that the scientists were very busy, but if we had

any pressing questions, she would see if she could find someone to answer them. We had no pressing questions. The exclusion zone itself did not disappoint.

I remember learning about the Yellowstone eruption in grade school. It was the kind of thing that sounded magnificent. I imagined myself, at the time, as one of the scientists who got to stand at the mouth of the active volcano, staring into the churning lava below. What would it feel like, to be that close? At the same time, I understood (in the vague way children understand danger) that I wouldn't want to be anywhere near that volcano, or any volcano, when it erupted. As a child who enjoyed adventure novels, I liked to imagine I would be able to do something heroic, like save myself and my brother (the obvious adventuring companion) by plunging us both into a lake below the smoke and ash. I always did alright in the competitions Evan and I held in our grandmother's pool to see who could hold their breath longer, after all.

Even more captivating than learning about the volcano and the eruption itself, however, had been learning about what happened after. It seemed at first like the only thing to follow that would be absolute desolation. At first, that's what did follow. An entire ecosystem razed as though it had never been. What could've survived a tsunami of fire? What I wasn't prepared for was how quickly and thoroughly life returned to Yellowstone, or the way the volcanic eruption actually helped life return. We learned that more specialized species returned first, the kind you see starting up any ecosystem. The rest followed, and the ecosystem thrived more than it had before the Yellowstone volcano erupted. We were fortunate that the Yellowstone eruption occurred at a national park. The damage to us as a people and a society was minimal.

That was decidedly not the case on Montserrat. The tour guide took us into the exclusion zone. There was a gate we had to go through, and we had to be prepared to leave at any time if word came from the observatory. The most memorable stop we made in the exclusion zone was an old resort now buried in ash. We were allowed to walk through the building, and saw what used to be inviting rooms still covered in volcanic ash. A tense hushed feeling dominated the space. It seemed as though breathing would be enough to disrupt it. There was a swimming pool out back as well, overlooking the ocean. At first, I thought it was a garden. The pool had been filled with ash, and plants were growing out of it. The thing that gave it away was the ladder.

When we left the ash-covered resort, we moved further into the exclusion zone, to a black sand beach with a better view of the towering volcano and all that surrounded it. Just like at Yellowstone, we could see new growth sprouting from the nutrient-rich ash that surrounded us. The landscape was a vivid green that contrasted starkly with the volcanic sand. The reef we surveyed at this site was affected by the volcano as well. The surfaces the corals were growing on were mostly volcanic boulders. We had to change our survey strategy a little bit, deciding quadrates by boulder instead of the usual way. This reef was also the only place we saw a live lionfish, which was very exciting for us and Rose's project, but not so great for the local environment. Lionfish are bold, territorial. It makes them excellent for photographing. So long as you keep a respectful distance, they'll stay out and give you a show. You just have to make sure not to get too close and provoke its spines.

We really had to start saying our goodbyes when we left Monserrat. Captain Dave left first because he was needed on an Arctic expedition. In addition to captaining for SEA, Captain

Dave captained large icebreaker ships for voyages with much higher stakes than ours. The timing was unfortunate, but unavoidable. Tim, of course, had to leave to make room for Mike. Captain Dave and Tim left in very close succession. They took turns giving speeches to the class about how much they were going to miss us and how much they wished they could stay. Tim went first, and I just barely managed to hold it together. Not long into Captain Dave's speech, I started crying. Part of me wants to be embarrassed by that, but honestly, I was just the first domino. Captain Dave saw me crying and started crying himself, and the rest of C-283 started soon after. Captain Dave and Tim had been with us from the beginning. It felt wrong to finish the voyage without them.

It felt like we woke up one morning and Captain Dave was gone. Tim's departure was a little more drawn out. Tim was leaving us on Antigua. Before he did, he led one last field trip to a museum there. I was far less focused than I should've been. I was thinking about the fact that we were *leaving* Tim behind, and that when this shore leave was over, we would get back on the ship and Tim would not. After the museum, most of the student crew went to find ice cream, which was our land-bound obsession. I asked Tim what he was going to do.

"I think Mike and I were going to grab lunch," he told me. "You should catch up with the rest of the crew. You don't want to get left behind."

I shook my head. "I'm mostly here to say goodbye to you." I had a moment of hesitation. "Unless the two of you wanted to hang out alone, which is totally fine."

Tim was touched, as he always was when I chose to spend time with him instead of the other students. He and Mike insisted I go with them, and we found a nice little spot to have

lunch. The food itself didn't necessarily feel like a luxury. Jen was an excellent cook, and not once during the voyage did I feel like I was missing out. Leftover days were a particular favorite. Every Friday we had a giant feast of anything that hadn't been eaten the first time around. It was an everything must go event, because food safety laws dictated that things could only be reheated once. Leftover days were a race to grab your favorite bits of what Jen and her rotating stock of assistants had made that week. The cold beverage that came with lunch, though, was a rare treat indeed. Perhaps the bigger treat was getting to see Mike and Tim together. I knew, from conversations with both, that they were friends. Mike had been an academic advisor for Tim at one point, and was Tim's connection to SEA. Still, I hadn't often seen them together. It was clear how much they actually care about each other.

We left in time to beat my student crewmates back to the dock. I lingered on the dock with Tim as long as I could, making sure I was in the final small boat trip back to the ship. Maybe it was foolish of me to drag it out. It's not a pleasant feeling, saying goodbye to someone you care about when you can't be sure when, or even if, you'll see them again. The stubborn part of me that wants to wring out every possible moment won, though. Finally, I couldn't avoid it anymore, and I had to get on the boat. Hunter was on that boat too, had dragged out his time with Tim as well. As we motored away from the island, a single tear slid down my face. I locked eyes with Hunter, and we nodded at each other. The three of us had spent more than one night having drinks together on Grenada. Hunter was going to miss Tim, too.

Then, finally, Cody and Kaleb left. Kaleb didn't have much of an effect on me, personally. He wasn't on my watch, and I'd never really formed a relationship with him. Cody

was a different story. Cody was my friend. Cody was also breathtakingly annoying his last morning there. He was still trying to keep up that tough guy persona his mom had effectively blasted out of the water. He was going to miss us, and he knew it. Instead of letting himself feel that, he made jokes and avoided anything even remotely serious, at least until the last moment. When it was actually time for him and Kaleb to leave the ship, he couldn't deny what was happening anymore. C-Watch lined up to say goodbye to him on the quarterdeck. We all took turns hugging him. I got to him first, but then when he was actually leaving, I reached for him again. He gave me one last hug, lifting my feet off the deck, and then he was gone.

The trip of goodbyes, Jen called us. Most trips, she explained, only had one serious goodbye: the big one at the end, the one that still loomed over us. I was trying not to think about it. At that point, I think we still had a couple of weeks left, though truly time had no meaning at sea. With each person who left, it was harder not to think about. I didn't feel ready to say goodbye to it all. Not yet.

Before he left, Tim had me promise I would look at a disco star through binoculars. I did, and it was even better than I could've imagined. Disco stars don't just twinkle the normal way. They twinkle different colors of light, and it makes them look like they dance across the sky. It's like something out of a cheesy sci-fi, but it's true.

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Dawn watch got eventful. The gangplank got caught in the jib sheets. Danno and Mike heard the commotion and came running on deck to help. It was honestly pretty scary, but we reacted quickly and fixed the problem. Emily said I did a good job.

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We had a nice peaceful beach day today, which I immediately followed with a nap. This turned into my most harried watch experience. We had worked out a system for being at anchor where the person with duties before yours was supposed to wake you up, but I guess Ariel forgot. She woke me up eight minutes after my duties were meant to be completed. I practically ran through the boat check.

I finished coral ID's today. Corrine was really impressed with my learning, which made me happy. I tried really hard, and I was even kind of enjoying it by the end.

"A student found a bottle of rum in the ocean?"

-Violet

"A student found a battering ram?

-Ricky

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"Sailing is about the butt!"

-Jailbreak

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I had a good conversation with Mike about getting out of your own head today. I was hoping he would be able to provide some words of wisdom, some magic trick. What he did offer was kindness and compassion and understanding, which is what I hadn't realized I needed.

On evening anchor watch, we got an alert about armed pirates taking an oil tanker. It was far away enough to be really cool rather than frightening.

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I learned to do a whipping on a line today. It's a lot like sewing.

It's weird to think how small the *Cramer* seemed when we got to visit in Woods Hole. How potentially claustrophobic. The shuffle of the companionways is natural and comfortable now.

I feel like I have so much left to do and so little time to do it.

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Tried Sargassum Tea today. At first it tastes like nothing. Then it lingers and tastes disgusting.

Hutch breakfast is amazing.

I was Shadow on afternoon watch. I got to steer the boat into the sunset while dolphins played in our wake.

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I'm incredibly sad. I don't know how to process how soon all of this is going away.

Chapter 15:
Victory Conditions

Once, on a midnight watch, I had an encounter with what Ricky called the Foredeck Gremlins. I was the only one on the foredeck, because I was the lookout. The ship deck tended to be a bit less lively at night, everyone on a watch either crowding in the lab or on the quarterdeck until a task required otherwise. The lookout had to stand right at the bow clipped in, watching the horizon to make sure we weren't going to have any untimely meetings with rocks, debris, or other ships. The shifts for lookout were meant to last about an hour, but that wasn't a hard rule. Some people liked it more than others. Cody, for example, was not a fan. Being from the Caribbean, nights were actually kind of cold to him, and being right at the front in all the wind didn't help. If he warned me to bundle up for lookout, I knew the weather was going to be my definition of perfect. I was a fan of the late lookout shifts, so mine lasted a little longer sometimes. I'd do my job, of course, but also stargaze and sing to myself. Most nights, I found it peaceful. Pleasant. The night I met the Foredeck Gremlins was an exception to that.

I'd already been out there a while when it started. It was just a whisper at first, something easy to dismiss as only the wind. Still, it had sounded an awful lot like my name. I shook my head, wrote it off, and kept up lightly singing as I tried to name still-unfamiliar constellations. Then I heard it again. Slightly louder. Unmistakably my name. I whirled around, looking for one of my crewmates. Maybe my shift was over, and someone had come to get me. It would be weird for them to be using that tone, but less weird than if no one was there. No one was there. I tried to steady my nerves. I stopped singing, listening, but I focused on the waves. I started hearing my name more frequently, but no one was there. Then finally I heard it, louder, rougher, one word: JUMP!

Obviously, I didn't. That would be idiotic. Throw myself into the arms of the sea in the pitch black of night, most likely never to be seen again? I don't know what kind of idiotic gremlin would try giving me that kind of instruction like I would follow it. If that coward wanted me in the drink, it would have to find the courage to push me itself. After that things calmed down a bit, and my shift ended not long after. I warned the group about what I'd heard, foolishly worried for the next person even though I knew it had likely all been in my head. Ricky explained the concept of Foredeck Gremlins. Apparently, I wasn't the first person to hear voices while alone out at sea. Ricky told me that if I was freaking out, I could come back and tell him and be relieved. Externally, I nodded. Internally, I scoffed. If everything was in my head, nothing was actually wrong and there was no reason to freak out in the first place. My pride wouldn't let me give in to it. If something was actually wrong, and the Foredeck Gremlins were real, I wouldn't want to subject anyone else to it.

The concept of ghosts at sea always seemed kind of strange to me. Ghost ships, I sort of got. A whole ship gone down with her crew and, returned to haunt the waves is a pretty cool notion, and I guess so is the idea of the occasional ghost of someone lost at sea. It's just that the ocean is such a big place, and aside from things like the Bermuda Triangle or a ghost ship, it just seems too vast to be haunted, unlike a house or a graveyard, or even a limited stretch of forest.

After seeing the final reef we surveyed, the idea of ghosts at sea started to make a whole lot more sense. The final reef we visited was a graveyard. What other graveyards was I not seeing, fathoms below us? The reef felt wrong. Haunted. Our survey teams were hard-pressed to find any life. There's a common misconception, about bleached coral, that it's dead. I mean, it seems like it should be. The white you're seeing is the white of the animal's bones. How could anything be alive when its bones have been exposed? The thing is, the coral's bones aren't really exposed. The "skin", if you will, has just gone translucent.Coral that have bleached can still come back, though the prognosis is grim. What you have to look for is algae growing on the coral. Once the coral can no longer defend itself from that, you can safely pronounce it dead. That's the victory condition for the algae, and the final marker of doom for the coral.

I knew that already, of course. So did you, I think. We learned it back in Woods Hole, when all of this still seemed so clinical and distant. Purely scientific. The knowledge didn't prepare me for being in the water, for actually seeing it. The algae conformed, mostly, to the shape of the coral it was devouring. It looked like coral, but fuzzy and so terribly wrong. In some places, the algae reached up away from the structure and toward the water, like pieces of flesh tearing away or a ghost leaving the body. I imagine these algae-devoured corals must look to

healthy coral the way zombies and ghouls look to us. Legions of the undead stretching for miles, promising doom to any living coral that could see it. We did find some live coral in the midst of it, and I wondered if it was lonely, if going on felt worth it. The culprit of all this destruction was a hurricane. The reef hadn't had a chance to recover yet. I had a hard time believing it ever would, and maybe it won't. Only time will tell.

After the survey was done, we were on to our final destination in the U.S. Virgin Islands. We would all be flying out of Saint John's. This was the reason Cody and Kaleb had to leave. All of us had been given easy access to pretty much the entirety of the Lesser Antilles island chain, but two native islanders couldn't possibly be allowed into U.S. territory. As we sailed toward St. John's, it was essentially finals. There was only one final, but it was critically important. We were all in a rush to process our data and draw whatever conclusions we could. I felt at a loss. I had managed, with the help of Corrine, to identify and sort all of the coral I was tracking into the appropriate categories, but I had no idea how to process the data. Jill, our data expert, was ecstatic to help me. She taught me how to make the appropriate calculations in excel sheets to create the graphs that would tell me what I needed to know.

I have to admit, I was disappointed. I was tracking coral species in both reproductive strategies in relation to temperature, salinity, and pH. According to the graphs I got, none of what I was tracking was significant. Getting a significant result was not the victory condition for the class. It's not even really the victory condition for science. Gaining knowledge is the point of science, and a negative result still adds to the larger body of information. It wasn't logical to be disappointed, but I was. I guess since I was sure that this would be the only real contribution I

would ever make to science, I wanted a positive result. A negative result isn't less impactful in the grand scheme of things, but I worried it was less likely to be pursued. Still, I wrote up my lab report, considering what other researchers might want to change if they repeated my experiment in the future. The biggest factor, in my mind at least, was geography. While we traveled a not insignificant distance, on a global scale our research sites were pretty close together, and the environmental factors I was monitoring didn't change a hell of a lot from site to site.

Despite what felt, at the time, like overwhelming odds, I finished my paper in time and converted it into a poster for the presentations we had to give around the ship. I managed to snag a spot in the shade to hang up my poster and give my little speech on what I had been studying, why, and what the results were. I was particularly excited when Jill came around. After helping me with my graphs, I knew she would be pleased to see what I had come up with. She was, but as she was examining my results, she said, "That one's actually significant."

I was shocked. "What?"

She pointed out the graphs comparing the percent Brooders and Broadcasters to pH levels. "The R-value is greater than .5. Just barely, but it's still significant."

At first, I was embarrassed. I had been wrong in my presentations, several times over, and probably in my explanation to Joe. I don't like being wrong publicly. I don't think anyone does. Then, I was ecstatic. The R-value is a measure of statistical significance. It proves that changes in your data matter, rather than just being normal anomalies or outliers. My research showed that there were more Brooders as pH levels increased, and fewer Broadcasters as pH levels increased. This seemed to imply that Brooders would do better than Broadcasters with the issue of

increased ocean acidification. Of course, they still have the problem of a lack of mobility, and it went against my hypothesis that Broadcasters would be able to cope better with climate change. I didn't really care. Something in my research came back significant, if only just.

Finals ending was both a blessing and a curse. We hadn't had much time to spend on anything but the science for about a week at that point. Now that it was out of the way, we could focus on each other. By then, we were docked at the U.S. Virgin islands, though not quite St. John's. Our sailing was all but over, our science was complete, and there wasn't much to distract us anymore from the fact that we were in the home stretch, that we only had a few measly days left on board. A few measly days left with each other. We did find good ways to fill the time other than dwelling. Jailbreak, I think, organized an art exhibition. A lot of our crew were creative or crafty people. I showcased some poetry. Joe did a piece on sargassum tea. A hilarious joke video was made about spongivorous fish with galley sponges. There was embroidery, drawings, and knitting. It was a great time. We also had one last bit of shore leave to snorkel on a reef, this time just for fun. The reef was a tourist destination, and blessedly alive. I swear a Southern Sting Ray stared into my soul while I was there, and it ended up making it into part of the tattoo I got when I got home.

During all of this, I was also planning Swizzle. Swizzle is a ship tradition. It's something that you do to close a voyage. The captain makes a toast. You all drink, and a beverage is poured into the ocean to appease the sea god of your choice. Then, there's a talent show of sorts. For better or for worse, I had volunteered to be the MC for this event, and my crewmates had pretty readily agreed. I say "for better or for worse": most of the time I was planning the event, I felt

like it was for worse. I'm pretty good at public speaking, and I had some experience with planning events, so I thought I would be pretty good at this. I didn't count on the utterly strange circumstances we were always dealing with.

As had been recommended to me by the powers that be, I made a sign-up sheet for the event. I requested everyone who wished to participate to sign up with what they wanted to do by what I thought was reasonable deadline, something like the day before. I wanted to give them as much time as possible to think and plan and decide, but I also had to be able to plan the show. Some acts were going to be funny, some emotionally moving, some more neutral in tone. One of the most important parts of my job, the way I saw it, was to keep things emotionally balanced. Three acts in a row that would leave people crying wouldn't be a good idea. We wouldn't want too many comedy routines following each other. We had plenty of good musicians on the ship but if they all went one after the other, we would lose some of the "variety" of the variety show.

No one else seemed to understand that, because no one seemed interested in following my deadline. I kept getting more and more people asking me to fit them in somewhere. Of course, I didn't say no to anyone, but I became increasingly overwhelmed. My frustration was starting to show. Every time I felt like I had solved the puzzle with whatever new piece was added, something else was thrown into the mix. Eventually, in the eleventh hour, I told them that I couldn't put anything else in the order, but promised I would have a solution for anyone who didn't get on the list for the order. Then, well past the eleventh hour, Harper told me that all of us as a surprise were going to be doing something together to thank the crew. I couldn't say no. I wouldn't have wanted to if I could've. Everyone else was on board. It meant I had to spend the

last hour I had before the event redoing the order yet again. When I was asked to come practice with them, I snapped that I couldn't because now I had to redo a significant portion of the work I had done.

My crewmates were understanding. They always were. It felt like more than I deserved. I'm not sure if I had ever hated myself more than I did in that moment. I knew my frustration was reasonable. I had talked to Ricky about it before. Apparently, this kind of thing happened on most voyages. It was easy for whoever wasn't planning Swizzle not to think about Swizzle, and the student in charge of it usually ended up overwhelmed. Still, I shouldn't have snapped. I agreed to go with them long enough to learn what I needed to do. Then, I went back to planning. It didn't take as long as I thought to fix it. Really, I only had to move a few things around. I felt even guiltier for becoming as upset as I had, but it was the stress of having to do it so many times, and how last minute this final addition was. I finished with about fifteen, twenty minutes to go. At first, I thought I should join the other students in practicing our thank you, but I knew I couldn't handle that emotionally. I needed a little time to center myself before I had to pretty much spend the whole night performing, so I hid out in the computer lab.

The isolation was probably a mistake. It gave my brain space to go into a mental spiral about how I had found my place so well with these people and probably ruined that right at the end by snapping at them like that. Maybe I couldn't handle being in charge of anything, after all. Maybe the best way for me not to be alone was to fade into the background. Luckily for me, my crewmates knew me better by that point, and I wasn't left by myself. Rose, Zoey, and Jordan all came to check on me in turn, reassuring me that everyone loved me and they were sure after all

the work I'd put in that Swizzle was going to be amazing. Whatever judgements they were making about me were far less harsh than the ones I was making about myself. I stayed in the computer lab until Swizzle, still wanting a little time to refocus, but after their visits I actually could focus instead of drowning in useless self-loathing.

Swizzle was a huge success even though I'd felt like I was spiraling through an error chain the entire time I was planning it. The acts made sense in the order I'd finally placed them in. With my MC bits I kept everyone engaged and laughing. I felt like I built and broke tension as was necessary. Everyone who I couldn't fit in, I fit near the very end with an open mic bit, something that Zoey hugged me for and told me was perfect after I'd been fretting because I forgot to put her piece in the official order. Open mic was probably my best idea, because it drew people in who wouldn't have wanted to go before seeing everyone else on our makeshift stage.

Myself, I kept for last. This was because, with the open mic section, I couldn't plan the timing as carefully as I wanted to. As the MC, I wasn't really sure if I should have a separate piece in the first place. If we ran out of time on anyone, I wanted us to run out of time on me. When I was confident no one else was going to take the floor in open mic, I asked if they minded if I did. The response was unanimously and overwhelmingly positive, so I did. I told them a story that I described as my series of error chains. This happened during that final shore leave in the U.S. Virgin Islands, where we got to snorkel on that lively reef without the pressure and responsibility of sampling. At first, I hadn't actually planned on going. The reef was one of two available options. The other was to stay and hang out on the beach, just swimming and having a good time. I was a little exhausted, and I didn't think I wanted to hike to another snorkeling

location. Then I made my first mistake. I asked a bunch of people if they were staying on the beach, and the only answer I got was “I’m not, but I’m sure someone else will”. Feel free to take a guess where the hive-mind went. No one else wanted to stay on the beach.

Luckily, I had brought my snorkel gear with me. There was some nice stuff to see that wasn’t a hike to basically the other side of the island, and I’d thought I would take a look at some of that. I lasted maybe three minutes before deciding I wanted to catch up. Somehow, despite not having brought shoes (didn’t think I would need them) I managed it. The beach on the other side, though, was anything but sandy. It was all rocks and coral. I’m partial to walking around barefoot, so it wasn’t excruciating, but I definitely moved slower. When someone else got to the beach she sent her shoes back to me with Joe, and though the shoes were a little small, I managed to catch up that way. I tried not to think about the inevitable walk back. I managed to avoid some of the walk. Some of my friends offered to carry my snorkel bag while I swam with our assistant engineer, the person who had lent me her shoes. This was a decision Joe could only tolerate for so long, and he motioned us back to shore. As I was trying to get out of the water, the culmination of my error chain occurred: I tripped and got a sea urchin spine stuck in my finger. It was oddly fitting. When I was swimming off the coast of Berlin on my first study abroad, I was stung by a jellyfish on my left calf. Getting another weird marine animal injury on my second study abroad felt like completing some sort of weird cycle, a ritual if you will.

When I started writing this, I thought it was going to be about error chains. I was kind of obsessed with the concept when we first learned about it. I mean, what a great metaphor for communicating climate change. One tiny mistake, something you don’t understand the

significance of, leads to error after error until the whole thing is out of control and spirals into disaster. Better even when paired with coral, as sensitive as they are. Such a small temperature change, something that seems so insignificant if you don't understand the implications, that causes so much chaos for these ecosystems. I was convinced there couldn't be anything better for the project I wanted to write.

Error chains were a good way to frame that story for my purposes during Swizzle. It was almost a standup comedy routine. I didn't manage to keep it that way through the end, though, because it wasn't really about the error chain, just like this project was never really about error chains. I explained this at the end of my speech as best I could, about how I had missed it until the last minute because I had never felt like I so thoroughly belonged somewhere in my life. It was always about victory conditions. See, if my escapade at the reef had really been an error chain, there wouldn't have been solutions to the million little problems I had. Our assistant engineer wouldn't have given me her shoes or swam part of the way back with me. Jordan wouldn't have come trotting back to the place Joe had us get out of the water, looking proud of himself and brandishing a spare pair of shoes he'd managed to get from Corrine for me. I wouldn't have been able to dissolve the urchin spine out of my finger with a cup of white vinegar Jen gave me from the galley. It was never about an error chain. It was about the most important victory condition C-283 ever had: sticking together. I think maybe error chains can only ever become error chains if you have to face them alone.

Unfortunately, we could only stick together for so much longer. We were at our final destination. We had our big goodbye with the crew in the morning in the form of a graduation on

the deck. During this, we got alumni pins, the least replicable piece of jewelry I've ever owned in my life. SEA doesn't sell it anywhere. You can only get one on the ship at the end of a voyage. Mine is a near-permanent fixture on my favorite jean jacket. Of the student crew, Hunter was the one we said goodbye to first. He was on an earlier flight. He left us from a park after we put him at the center of a group hug. Next, we lost Ryleigh. I think she made a mistake booking her flight, so she had one more night on the ship. I can't imagine it felt right without the rest of us. She saw us off at the gang plank, getting her hugs from each of us in turn. I don't think it felt any more right leaving her behind than I imagine it felt being left.

The rest of us all had flights going out at about the same time. We ran into Mike at the airport. He'd tried to say his goodbyes to us earlier, but he was leaving on the second flight with half of us. He was there to get a picture of what happened when the first flight was called. All fourteen of us who were left stood in the middle of that tiny airport in a circle, arms around each other, until the very last minute when the flight was boarding and the first group had to go. We were crying, absolutely making a scene, and we could not have cared less. I was on the second flight. We splintered into yet another group for our connecting flights. Ariel, Alice, and I all live pretty close together, so we made the final leg of the journey together.

Dad was waiting for me at the airport, right on time as always. I was never a kid who had to worry I'd been forgotten at one after school activity or another. I dropped my bag and practically tackled him in a hug. Still, I think it had been the least happy I've ever been to see him. We waited for Ariel and Alice to get picked up too, but I couldn't help feeling that if he'd been late, just the once, I would've been able to spend just a little more time with the last of my

crew. The last victory condition had been met. We'd faced it all together, and made it home safe.

It took a long time before anywhere without the rest of them felt like home.